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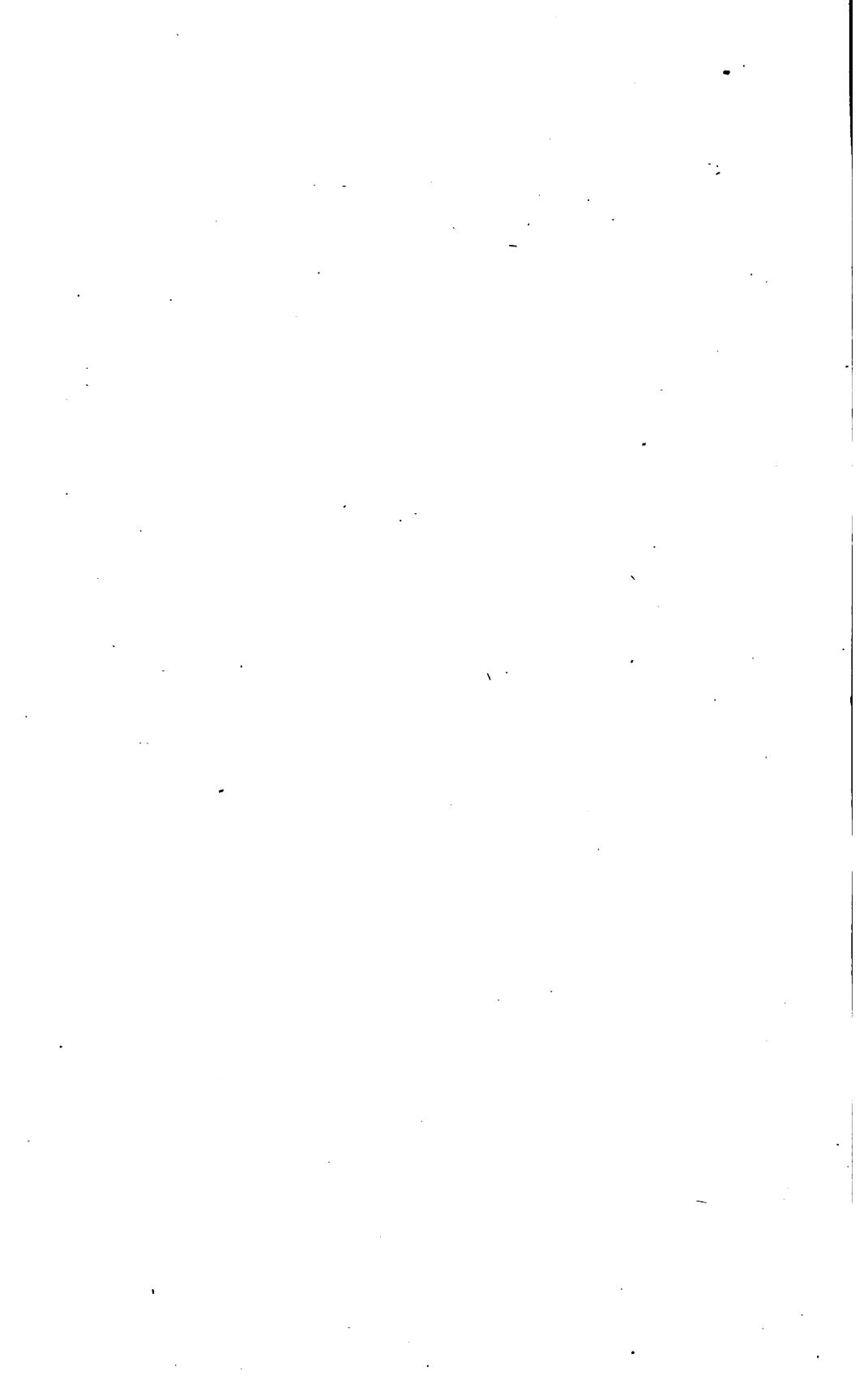
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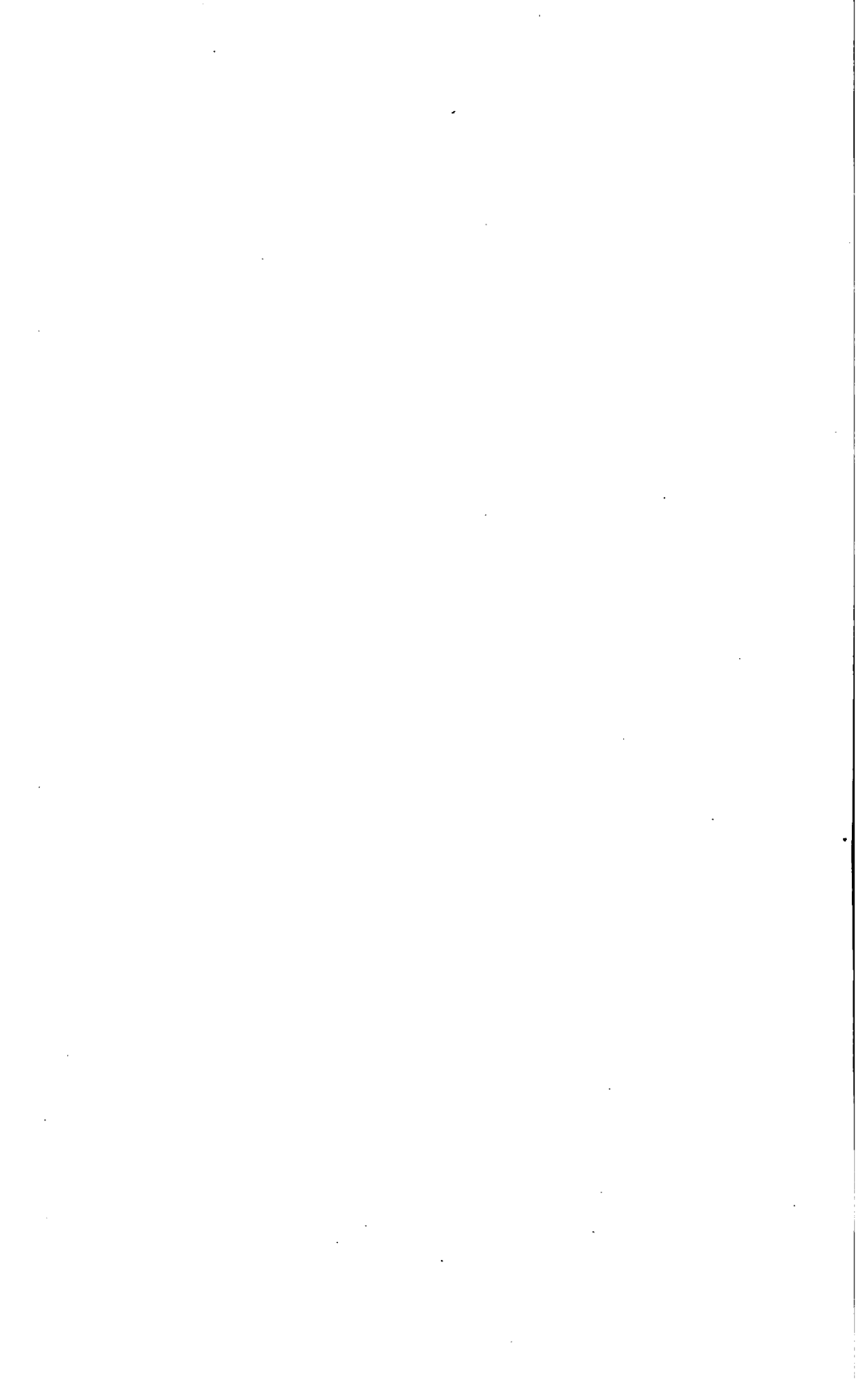
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**CATALOGUE**  
**AND**  
**PRICE LIST**  
**OF**  
**WROUGHT AND CAST IRON PIPE,**  
**STEAM AND GAS PIPE FITTINGS,**  
**BRASS AND IRON STEAM VALVES AND COCKS,**  
**TOOLS, SUPPLIES,**  
**AND OTHER ARTICLES INCIDENTAL TO**  
**STEAM AND GAS ENGINEERING,**  
**AND**  
**HOT WATER AND STEAM HEATING,**  
**MANUFACTURED BY**  
**JAMES J. WALWORTH & CO.,**  
**No. 1 BATH STREET,**  
*(Corner Congress and Water Streets,)*  
**BOSTON.**

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**BOSTON:**  
**J. E. FARWELL & COMPANY, PRINTERS,**  
**37 CONGRESS STREET.**  
**1870.**



~~It. 1696~~ Eng 1138.70

1883, Oct. 16.  
Given  
to Mr. J. S. Green,  
of Boston.

## PREFACE.

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WE beg to present to our friends and the public a Catalogue and List of Prices of the various descriptions of Goods manufactured by us.

An experience of twenty-seven years in our business, and unrivalled facilities for manufacturing, enable us to offer our customers Goods of superior style and quality, and to give mature and judicious Engineering and Mechanical advice (for which we make no charge) in the planning and execution of work.

Having Iron and Brass Foundries of our own, in connection with our machine shops, we claim to have facilities for executing all kinds of Work, unsurpassed by those of any other establishment in the country.

We would call the attention of our friends to the fact that we are the originators of the plan of WARMING BUILDINGS, HEATING, DRYING, &c., by STEAM, through the use of WROUGHT IRON PIPES. Our experience in this department has enabled us to bring our Apparatus to a high state of perfection. We have applied this mode of warming to more than three thousand buildings, and with uniform success.

It is our purpose to spare no exertion to maintain our reputation, and to continue to deserve the approbation of our customers.

The following Price List is a Catalogue of our manufactured articles. We are also prepared to furnish any article in our line, either of Iron or Brass, of any peculiar shape or design, and respectfully solicit such orders.

JAMES J. WALWORTH & CO.

J. J. WALWORTH,  
M. S. SCUDDER,  
C. C. WALWORTH. }

Boston, January 1, 1870.

# WROUGHT IRON WELDED TUBE,

## IN RANDOM LENGTHS,

### FOR STEAM, WATER OR GAS.

1 1/4 inch and below, butt welded; proved to 300 lbs. pressure per square inch.

1 1/2 inch and above, lap welded; proved to 500 lbs. pressure per square inch.

TABLE OF STANDARD DIMENSIONS AND PRICES.

Nominal Diameter.	Price per foot.	Price per foot. Galvanized.	Actual Outside Diameter.	Thickness.	Actual Inside Diameter.	Weight per running foot.
INCHES.	\$ c.	\$ c.	INCHES.	INCHES.	INCHES.	LBS.
1/8	09		0.405	0.068	0.270	0.243
1/4	09	15	0.54	0.088	0.364	0.422
3/8	10	15	0.675	0.091	0.494	0.561
1/2	12	18	0.84	0.109	0.623	0.845
3/4	16	24	1.05	0.113	0.824	1.126
1	23	33	1.315	0.134	1.048	1.670
1 1/4	32	44	1.66	0.140	1.380	2.258
1 1/2	40	55	1.9	0.145	1.611	2.694
2	56	75	2.375	0.154	2.067	3.667
2 1/2	90	1 20	2.875	0.204	2.468	5.773
3	1 30	1 65	3.5	0.217	3.067	7.547
3 1/2	1 60	2 10	4.0	0.226	3.548	9.055
4	2 00	2 50	4.5	0.237	4.026	10.728
5	2 80	4 00	5.563	0.259	5.045	14.564
6	4 00		6.625	0.280	6.065	18.767
7	5 50		7.625	0.301	7.023	23.410
8	7 00		8.625	0.322	7.982	28.348

**WROUGHT IRON WELDED TUBE,**

## Extra Strong.

### TABLE OF STANDARD DIMENSIONS AND PRICES.

*Dimensions not given below made to order.*

Nominal Diam't'r.	Actual Outside Diameter.	Thickness. Extra Strong.	Actual Inside Diameter. Extra Strong.	Actual Inside Diameter. Double Extra Strong.	Price per foot. Ext. Strong.	Price per foot. Double Ext. Strong.
INCHES.	INCHES.	INCHES.	INCHES.	INCHES.	\$ c.	\$ c.
$\frac{1}{8}$	0.405	0.100	0.205		16	
$\frac{1}{4}$	0.54	0.123	0.294		17	
$\frac{3}{8}$	0.675	0.127	0.421		20	34
$\frac{1}{2}$	0.84	0.149	0.542	0.244	25	40
$\frac{3}{4}$	1.05	0.157	0.736	0.422	32	50
1	1.315	0.182	0.915	0.587	46	70
1 $\frac{1}{4}$	1.66	0.194	1.272	0.884	64	1 00
1 $\frac{1}{2}$	1.9	0.203	1.494	1.088	80	1 35
2	2.375	0.221	1.933	1.491	1 15	2 00
2 $\frac{1}{2}$	2.875	0.280	2.315	1.755	1 70	3 00
3	3.5	0.304	2.892	2.284	2 35	4 20
3 $\frac{1}{2}$	4.0	0.321	3.358	2.716	3 30	5 90
4	4.5	0.341	3.818	3.136	4 20	7 35

## SEAMLESS BRASS TUBE.

(Seamless from  $\frac{1}{2}$  inch to  $2\frac{1}{2}$  inches.)

[illegible]

### LAP WELDED AMERICAN CHARCOAL IRON BOILER FLUES.

Cut to specific lengths to suit purchasers. Lengths greater than 20 feet at special rates. It is impossible to make tubes of exact internal diameter.

TABLE OF STANDARD DIMENSIONS AND PRICES.

External Diameter.	Price per foot.	* Standard Thickness.	* Nearest Wire Gauge Thickness.	Internal Diameter.	Internal Area.	Weight per foot.
INCHES.	\$ c.	INCHES.	GAUGE.	INCHES.	INCHES.	LBS.
1½	30	0.072	15	1.106	0.960	0.9
1½	30	0.083	14	1.334	1.396	1.250
1¾	30	0.095	13	1.560	1.911	1.665
2	30	0.098	13	1.804	2.556	1.981
2¼	34	0.098	13	2.054	3.314	2.238
2½	38	0.109	12	2.283	4.094	2.755
2¾	42	0.109	12	2.533	5.039	3.045
3	50	0.109	12	2.783	6.083	3.333
3¼	54	0.119	11	3.012	7.125	3.958
3½	60	0.119	11	3.262	8.357	4.272
3¾	75	0.119	11	3.512	9.687	4.590
4	90	0.130	10	3.741	10.992	5.320
4½	1 12	0.130	10	4.241	14.126	6.010
5	1 35	0.140	9½	4.72	17.497	7.226
6	1 80	0.151	9	5.699	25.509	9.346
7	2 25	0.172	7½	6.657	34.805	12.435
8	3 38	0.182	7	7.636	45.795	15.109
9	4 50	0.193	6½	8.615	58.291	18.002
10	6 00	0.214	5½	9.573	71.975	22.19

\* The thickness of Flues can be varied to order, at prices dependent upon thickness and the number of feet wanted.

### CIRCULAR COILS OF WROUGHT IRON PIPE.

TABLE OF PRICE PER RUNNING-FOOT OF PIPE.

Size.....	¼	⅜	½	¾	1	1½	1¾	2
Com'n Pipe,	35	40	45	55	65	1 00	1 25	1 60
Ext. Strong Pipe...	45	50	60	70	85	1 20	1 50	1 90

**BOX COILS.****TABLE OF PRICES PER FOOT OF PIPE.**

Length of Coil...	2 ft. 6	3 feet.	3 ft. 6	4 feet.	4 ft. 6	5 feet.	6 feet.
$\frac{3}{4}$ inch Pipe .....	35	32	30	28	27	26	25
1 inch Pipe.....	46	42	39	36	34	32	31

**GALVANIZED IRON FITTINGS.**

Size .....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{4}$	3	$3\frac{1}{2}$	4	5
Caps, Nipples & Couplings,	16	18	25	35	46	58	75	1 20	1 75	2 25	2 75	4 25
Elbows .....	16	18	24	40	60	75	1 10	2 25	3 00	3 75	4 50	7 00
Tees .....	25	30	35	50	75	1 00	1 60	3 00	4 25	5 25	6 00	10 00
Crosses .....		45	50	70	1 00	1 25	2 00	4 00				
Street Elbows,		35	40	55	85	1 25	2 00					
Return Bends,		36	43	60	90	1 20	1 85					
Unions .....		75	1 00	1 25	1 60	2 20	2 75	4 00				
Air Chambers,		75	90	1 00	1 25							

# MALLEABLE IRON FITTINGS, FOR GAS AND STEAM PIPE.

By the use of entirely new and novel machinery, which we have invented and patented, we are enabled to cut our Screws with great accuracy and with unparalleled rapidity.

WE ARE, THEREFORE, PREPARED TO OFFER  
**GOODS OF SUPERIOR QUALITY,**

AND AT  
**EXTREMELY LOW PRICES.**

We have an illustrated Catalogue of all our Fittings, designating the size by numbers which we will forward by mail, on application.

## FITTINGS FOR WROUGHT IRON PIPE.

### ELBOWS.

Size...	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
Price..	6	7	8	10	16	22	35	45	70	1 15	2 00	2 60	3 25	5 25	7 25

Side Outlet Elbows (Cast Iron) and Offsetts, double the Price of Elbows.

### STREET ELBOWS.

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price....	22	30	40	65	95	1 50

### SERVICE BENDS (WROUGHT IRON).

$\frac{3}{4}$  inch, 30 | 1 inch, 40 |  $1\frac{1}{4}$  inch, 75 |  $1\frac{1}{2}$  inch, \$1 00 | 2 inch, \$1 35

**TEES.**

Size...	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
Price..	9	10	12	15	22	35	45	60	90	1 75	2 50	3 35	4 10	7 00	10 00

**CROSSES.**

Size....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
Price....	14	18	22	30	45	60	85	1 20	2 25	3 25	4 35	5 25	9 00	13 00

**CROSS-PIPE FITTING.**

We call attention to this New Fitting and its use. In the construction of Steam Apparatus, the pipes running in different directions often interfere with each other in passing; this fitting allows a central passage, thus obviating all the difficulty of crossing pipes.

Size .....	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price.....	70	90	1 30	1 80

**RETURN BENDS.**

Size .....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Price, close pat., Cast I. or M. I.		28	40	50				
Open Pattern, Cast Iron.....		28	40	60	80	1 40	2 30	3 25
Inches from centre to centre,		$2\frac{1}{8}$	$2\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{1}{4}$	4	$4\frac{1}{8}$	$6\frac{1}{2}$
Open Pattern, Malleable Iron..	30	40	56	78	1 00	1 85	2 85	
Inches from centre to centre,	$1\frac{1}{8}$	2	$2\frac{1}{4}$	$2\frac{7}{8}$	$3\frac{1}{8}$	4	$4\frac{1}{8}$	

Return Bends  $1\frac{1}{4}$ , 5 inches centre to centre, \$1 25.

**PLUGS, CAPS AND LOCKNUTS.**

Size.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
Price..	7	7	8	10	14	18	24	30	40	72	1 00	1 50	1 90	3 25	5 00

**BUSHINGS, NIPPLES, R. & L. AND REDUCING COUPLINGS.**

Size...	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
Price..	8	9	12	14	16	24	30	40	60	1 00	1 30	1 75	2 25	3 75	5 25

**WROUGHT IRON COUPLINGS. R. H.**

Size...	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5	6
Price..	7	8	10	12	15	22	30	38	56	90	1 30	1 75	2 25	3 50	5 25

**MALLEABLE IRON UNIONS.**

Size.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Price....	32	40	48	64	80	1 05	1 35	1 90	3 00	4 20	6 00	7 50



**FLANGE UNIONS,  
With Bolts and Nuts.**

Size.....	1½	2	2½	3	3½	4
Dia. of Flange,	5 inches.	5 inches.	5½ inches.	6 inches.	7 inches.	7½ inches.
Price.....	2 50	2 75	3 25	4 25	5 50	7 00

**HOOKS AND CLIPS.**

Size.....	½	¾	1	1½	2	2½	3
Short Shank & Beam Hooks.....			12	15	20	25	35
W. I. Hooks & Clips.	2	2	2	3	4	5	6
W. I. Hooks per thousand, net....	6 00	6 50	7 00	10 00	12 00	18 00	24 00

**HOOK PLATES.**

Number of Hooks.....	2	3	4	5	6	7	8
For ¾ inch Pipe.....	20	28	36	44	52	60	70
For 1 inch Pipe.....	26	34	42	50	60	70	80
For 1½ inch Pipe.....	40	45	55	65	80	95	1 10

BOSTON, July 1st, 1870.

REVISED PRICE LIST

— OF —

**Wrought Iron Pipe.**

INSIDE DIAM. Inches.	WROUGHT IRON PIPE. Per Foot.	EXTRA STRONG PIPE. Per Foot.	DOUBLE EXTRA STRONG. Per Foot.	GALVANIZED PIPE. Per Foot.
$\frac{1}{8}$	.09	.16		
$\frac{1}{4}$	.09	.17		.15
$\frac{3}{8}$	.10	.20	.34	.15
$\frac{1}{2}$	.12	.24	.42	.18
$\frac{3}{4}$	.16	.34	.59	.24
1	.23	.50	.87	.33
$1\frac{1}{4}$	.32	.64	1.07	.44
$1\frac{1}{2}$	.40	.85	2.05	.55
2	.56	1.12	2.50	.75
$2\frac{1}{2}$	.90	1.91	3.35	1.20
3	1.30	2.40	4.20	1.65
$3\frac{1}{2}$	1.60	3.50	6.00	2.10
4	2.00	4.00	7.00	2.50
5	2.80			4.00
6	4.00			

JAMES J. WALWORTH & CO.,

*No. 1 Bath Street.*

Chlorophyll content

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**BRANCH TEES.**

Number of Outlets.....	2	3	4	5	6	7	8
$\frac{3}{4}$ inch Outlets.....	80	1 00	1 30	1 60	2 00	2 40	2 80
1 inch Outlets.....	1 05	1 40	1 80	2 10	2 50	3 00	3 50
$1\frac{1}{4}$ inch Outlets.....	2 00	2 40	2 80	3 25	3 75		
1 inch Outlets, large run.....	1 50	1 90	2 30	2 75	3 20	3 65	4 10
$1\frac{1}{4}$ inch Outlets, large run.....							

**C. C. WALWORTH'S PATENT MANIFOLD,  
OR BRANCH TEE.**

(SEE FIG. NO. 1, SUPPLEMENT.)

This improvement combines the Main Pipe, Manifold and Valve in *one fitting*, dispensing with several fittings and the necessary joints and labor.

It is very easily repaired, and has the advantage of controlling the circulation through a portion or all of the radiating pipes, as the temperature may require.

Number of Branches.	No. 1. D'ble Valve, Supply, 1 in. outlets.	No. 4. D'ble Valve, Return, 1 in. outlets.	No. 2. D'ble Valve, Supply, 1 $\frac{1}{4}$ in. outlets.	No. 5. D'ble Valve, Return, 1 $\frac{1}{4}$ in. outlets.	No. 3. S'gle Valve, Supply, 1 in. outlets.	No. 6. S'gle Valve, Return, 1 in. outlets.
2	9 00	6 50	16 50	11 50	5 00	4 00
3	9 50	6 75	17 00	12 00	5 50	4 50
4	10 00	7 00	17 50	12 50	6 00	5 00
5	10 50	7 25	18 00	13 00	6 50	5 50
6	11 00	7 50	18 50	13 50	7 00	6 00

**CAST IRON FLANGES.**

Sizes in this List kept on hand. Other sizes made to order.

DIAMETER OF FLANGES IN INCHES.	SIZES OF PIPE UPON WHICH THEY WILL SCREW.										
	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5
12						2 68	3 00	3 10	3 25	3 50	4 50
11						2 30	2 50	2 70	2 90	3 00	4 00
10					1 80	1 94	2 10	2 25	2 50	2 60	3 50
$9\frac{1}{2}$					1 64	1 78	1 95	2 10	2 25	2 40	3 00
9			1 27	1 40	1 50	1 63	1 80	1 90	2 00	2 20	
$8\frac{1}{2}$			1 15	1 28	1 37	1 50	1 65	1 80	1 90	2 00	
8		98	1 04	1 16	1 25	1 36	1 50	1 65	1 75	1 85	
$7\frac{1}{2}$		92	93	1 00	1 14	1 25	1 38	1 50	1 60		
7		80	85	90	1 02	1 13	1 25	1 40	1 50		
$6\frac{1}{2}$	60	68	75	82	89	1 03	1 15				
6	52	56	65	72	78	95	1 10				
$5\frac{1}{2}$	45	49	58	63	70	75	90				
5	39	43	50	55	61	70					
$4\frac{1}{2}$	34	38	44	48							
4	30	34	40								

**FLOOR FLANGES.**

$\frac{1}{2}$ .....13 |  $\frac{3}{4}$ .....14 | 1.....15 |  $1\frac{1}{4}$ .....16 |  $1\frac{1}{2}$ .....20 | 2.....25

**IRON STEAM COCKS.**

Size .....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Iron Plug, Screw'd Ends.	1 30	1 90	2 25	3 00	4 50	6 50	10 00	14 00	18 50	25 00
Brass Plug, Screw'd Ends.	2 10	3 15	4 50	6 60	9 50	14 00	21 00	32 00	44 00	55 00

**STEAM VALVES,**  
Iron Bodies, Brass Mounted.

**GLOBE AND ANGLE VALVES.**

Size .....	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	5
Screwed .....	5 00	6 25	9 50	15 00	20 00	28 00	32 00	50 00
Flanged .....	5 75	7 10	11 00	16 25	21 50	28 00	34 00	55 00

**IRON GLOBE VALVES,**

With Bolted Stuffing Box.

6 inch, \$65 00 | 8 inch, \$125 00 | 10 inch, \$250 00 | 12 inch, \$350 00

**CROSS VALVES.**

$2\frac{1}{2}$  inch.....\$18 00 | 3 inch.....\$27 00

**SAFETY VALVES.**

Size.....	1½	1½	2	2½	3	3½	4	5
Price.....	7 50	10 00	15 00	20 00	27 00	32 00	40 00	65 00
Weights weigh....	LBS. 18½	LBS. 20	LBS. 34	LBS. 34	LBS. 70	LBS. 70	LBS. 100	LBS. 150

**BACK PRESSURE VALVES.**

For Controlling Exhaust Steam for Heating Purposes.

Size.....	1½	2	2½	3	3½	4	5	6
Price.....	8 00	11 25	15 50	18 00		30 00	40 00	48 00

**REGULATOR VALVES.**

2½ inch, \$20 00 | 3 inch, \$27 00 | 4 inch, \$40 00

**CHECK VALVES.**

1½ in. \$4 00 | 1½ in. \$5 50 | 2 in. \$7 50 | 2½ in. \$11 50 | 3 in. \$16 50

**UNION CHECK VALVES.**

This Valve being in combination with a Union, is rendered easy of access in case of repair, and is especially desirable as a Lower Valve for Lift Pumps,

Size.....	¾	1	1½	1½	2
Price.....					

**HYDRANT GLOBE VALVE.**

2 inch, \$14 00 | 2½ inch, 18 00 | 3 inch, \$22 00 | 4 inch, \$30 00

**FACTORY HYDRANT VALVE.**

2½ inch, Single Outlet, \$15 00 | 2½ inch, Double Outlet, \$18 00

**GAS GATES.**

J. J. W. & Co.'s Pattern.

3 inch, \$15 00 | 4 inch, \$20 00 | 6 inch, \$30 00

**BRASS VALVES, COCKS, UNIONS, &c.****BRASS GLOBE AND ANGLE VALVES.**

Size...	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½
Price..	1 10	1 30	1 55	2 35	3 35	4 60	6 00	9 00	21 00	30 00	80 00
Globe, Fl'g'd.				6 25	7 50	11 00	13 50	20 00	36 00	45 00	95 00

**ADAMS' ANGLE VALVES.**

1 inch, \$5 50 | 1½ inch, \$8 00 | 1½ inch, \$11 00 | 2 inch, \$18 00



**JENKINS' PATENT COMPRESSION VALVES. (Brass.)**

(SEE FIG. NO. 3, SUPPLEMENT.)

Size.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Price.....	1 10	1 30	1 55	2 35	3 35	4 60	6 00	9 00	25 00	38 00
Ex. Disks, net.	04	06	06	10	15	25	37	65	87	1 37

**PEET'S PATENT VALVE. (Composition.)**

(SEE FIG. NO. 2, SUPPLEMENT.)

Size.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Price, Screwed ....	1 50	1 55	2 35	3 35	4 60	6 00	9 00	15 00	20 00
Price, Flanged....							18 00	25 00	32 00

**Iron Bodies, Brass Mounted.**

3 inch, \$20 00 | 4 inch, \$28 00 | 5 inch, \$34 00 | 6 inch, \$40 00

**LUDLOW'S PATENT SLIDING STOP VALVES.**

(SEE FIG. NO. 4, SUPPLEMENT.)

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Price.....	1 75	2 35	3 35	4 60	6 00	9 00	18 00

**LUDLOW'S PATENT VALVES.** (Continued.)**Iron Bodies, Brass Mounted.**

SIZE.	Diameter of Standard Flange.	Measure from face to face of Flanges.	Measure from end to end of Hubs.	Measure from face to face of Scr'w S'ck't.	Price, Screwed.	Price, Flanged.	Price, Hub.
	INCHES.	INCHES.	INCHES.	INCHES.	\$ c.	\$ c.	\$ c.
2½	7	6½		5½	13 75	13 75	
3	8	8½	10½	8½	18 00	18 00	18 00
3½	8½	8		8	22 50	22 50	
4	9	9½	12	8½	25 50	25 50	25 50
5	10	10½	12	9½	32 50	32 50	
6	11	10½	12½			38 50	38 50

				Brass Mounted.	All Iron.	Indicator.
INCHES.	INCHES.	INCHES.	INCHES.	\$ c.	\$ c.	\$ c.
8	13	11	13½	52 00	49 00	5 00
10	16	12½	14	65 00	60 00	5 25
12	18	12¾	14½	84 00	76 00	5 50

**To Bear Extra Heavy Pressure on either Side of Gate.**

	Diameter of Standard Flange.	From face to face of Flanges.	From end to end of Hubs.	PRICE.
	INCHES.	INCHES.	INCHES.	\$ c.
6 inch Iron, Brass Mounted.	11	10½	14½	42 00
7 " " " "	12	10½	13½	49 00
8 " " " "	13	11	14½	56 00
10 " " " "	16	12½	14	70 00
12 " " " "	18	12½	14½	90 00

**BRASS CROSS VALVES.**

Size.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2
Price.....	1 75	2 00	3 00	4 25	6 00	7 50	12 00
Boiler Feed, finished, heavy, net.				6 00	8 20	10 50	16 25

**BRASS GLOBE AND UPRIGHT CHECK VALVES.**

Size.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2
Price.....	1 10	1 30	1 55	2 20	3 00	4 10	5 50	8 50

**BRASS REGULATOR VALVES.***1" smallest pattern we have*

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Price.....		5 00	6 00	7 50	10 50	16 00	

**BRASS SAFETY VALVES.****BRASS VACUUM VALVES.**

Size.....	$\frac{3}{4}$	1		Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$
Price.....	4 50	7 00		Price....	1 30	2 00	2 50	4 00

**BRASS STEAM COCKS.**

$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
90	1 15	1 75	2 35	3 00	5 00	7 00	9 00	12 50	21 00	30 00

Brass Steam Cocks, Flanged, per lb., 60 cents, net.

**BRASS DRIVING COCKS.**

$\frac{3}{4}$  inch, \$3 50 | 1 inch, \$4 50 |  $1\frac{1}{4}$  inch, \$5 50 |  $1\frac{1}{2}$  inch, \$8 75

**BRASS GAS COCKS.**

Size .....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$
Best.....	1 00	1 30	1 75	2 60	3 50	5 00	6 75	9 75	21 00
Western .....		1 00	1 35	2 10	3 00	4 30	6 00	9 00	

**UNION GAS COCKS.****LAMP POST COCKS. (Brass.)**

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1		Size .....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Price.....	3 00	3 35	4 00		Price.....	70	70	80	90

**BRASS UNION JOINTS.**

Size.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Price.....	50	55	70	1 00	1 30	1 75	2 50	3 00	4 50	7 25	10 00

**BRASS SOLDERING AND BRAZING NIPPLES.**

Size .....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Soldering.....	25	26	34	45	65	80	1 00	1 50	3 00	4 50
Brazing.....	30	35	45	55	75	95	1 25	1 75		

**BRASS HOSE NIPPLES.**

Size.....	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Price.....	55	78	1 15	1 60	2 75	4 50	6 00

**BRASS HOSE COUPLINGS.**

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2
Price.....	88	1 00	1 25	1 75	2 25	4 00

**BRASS UNION CYLINDER COCKS.**

$\frac{3}{8}$  inch..... \$3 00 |  $\frac{1}{2}$  inch..... \$4 50

**BRASS AIR COCKS.**

$\frac{1}{8}$  inch..... \$0 75 |  $\frac{1}{4}$  inch..... \$1 00 |  $\frac{3}{8}$  inch.... \$1 50

**BRASS PENDANT COCKS.**

Size.....	$\frac{1}{8}$	$\frac{1}{4} \times \frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8} \times \frac{1}{8}$	$\frac{3}{8} \times \frac{1}{4}$	$\frac{3}{8}$
Price.....	65	65	65	70	70	70

**BRASS SWING JOINTS.**

Size.....	$\frac{1}{8}$	$\frac{1}{4} \times \frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8} \times \frac{1}{8}$	$\frac{3}{8} \times \frac{1}{4}$	$\frac{3}{8}$
Price for Gas..	65	65	65	70	70	70
Heavy for Steam.....	$\frac{3}{8}$ in. \$2 00	$\frac{1}{2}$ in. \$2 75	$\frac{3}{4}$ in. \$3 25	1 in. \$4 25		

**BRASS SWING JOINTS,****With Cocks.**

Size.....	$\frac{1}{4} \times \frac{1}{8}$	$\frac{1}{2}$	$\frac{3}{8} \times \frac{1}{8}$	$\frac{3}{8} \times \frac{1}{4}$	$\frac{3}{8}$
Price.....	1 00	1 00	1 10	1 10	1 10

**BRASS SWING PENDANT COCKS.**

Size.....	$\frac{1}{4} \times \frac{1}{8}$	$\frac{1}{2}$	$\frac{3}{8} \times \frac{1}{8}$	$\frac{3}{8} \times \frac{1}{4}$
Price.....	1 00	1 00	1 10	1 10

**BRASS DOUBLE CENTRES.**

Size.....	$\frac{1}{4} \times \frac{1}{8}$	$\frac{1}{2}$	$\frac{3}{8} \times \frac{1}{8}$	$\frac{3}{8} \times \frac{1}{4}$
Price.....	1 10	1 10	1 25	1 25

**BALL AND STRAIGHT NOZZLES.**

$\frac{1}{8}$ .....15 cents. |  $\frac{1}{4} \times \frac{1}{8}$ .....18 cents.

**BRASS CAPS, PLUGS, COUPLINGS AND NIPPLES.**

Size.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price.....	14	16	20	25	35	45	70	1 10	1 60

**BRASS BUSHINGS AND LOCKNUTS.**

Size.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price.....	08	09	12	14	22	30	45	65	90

**BRASS ELBOWS.**

Size.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price.....	16	20	26	35	48	65	90	1 10	2 00

**BRASS TEES.**

Size.....	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price.....	20	30	40	50	65	1 00	1 25	1 50	2 50

**BRASS RETURN BENDS.**

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
Price, heavy.....	80	1 75	2 75	3 50	4 00
Light.....	80	1 25	1 50		

**BRASS CROSSES.**

$\frac{1}{2}$  inch... 80 |  $\frac{3}{4}$  inch...\$1 25 | 1 inch...\$1 30 |  $1\frac{1}{4}$  inch...\$1 75

**BRASS EXPANSION JOINTS.**

Size.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$2\frac{1}{2}$
									IRON.
Price.....	2 30	2 75	3 75	5 00	7 00	10 00	12 00	18 00	16 00

**BRASS OIL CUPS.**

Number.....	00	0	1	2	3	4	5	6	7	8
Price.....	35	40	50	65	85	1 10	1 40	1 75	2 10	2 50
Price with Cock ...			1 40	1 75	2 25					6 50

**EXCELSIOR OIL CUP.****For Oiling Loose Pulleys.**

(SEE FIG. NO. 63, SUPPLEMENT.)

These cups are secured into the hub of the pulley in the place of the ordinary oil hole, and will hold sufficient oil to last from two to six months, according to size, and in three months will economize, in time and oil, sufficiently to cover their cost.

Size.....	1	2	3	4
Price, net.....	60	70	1 00	1 20

**DOUBLE OIL VALVES.****HOLLOW PLUG OIL COCK.**

$\frac{1}{2}$  inch, \$8 00 |  $\frac{3}{4}$  inch, \$9 00 | No. 8, \$5 50 | No. 12, \$9 50



**ROSS' NEW PATENT OIL CUP.**

Number.....	1	2	3	4	5
Size of Globe, inches.	1½	2	2½	3	4
Price.....	5 00	7 50	9 00	10 00	15 00

**STORER'S PATENT OPEN TOP SUET LUBRICATOR.**

Size .....	1½	2	2½	3	4	5	6	7
Price.....	9 00	10 00	12 00	15 00	20 00	25 00	30 00	35 00

**CORLISS CYLINDER OIL PUMP.**

No. 1, ¾ in. Pipe Thr'd.	No. 2, ¾ in. Pipe Thr'd.	No. 3, ½ in. Pipe Thr'd.
16 00	14 00	12 00

**GAUGE COCKS.****JENKINS' PATENT COMPRESSION GAUGE COCKS.**

(SEE FIG. NO. 8, SUPPLEMENT.)

⅜ inch.....\$2 25 | ½ inch.....\$2 50 | ¾ inch.....\$3 00

**BISBEE & ENDICOTT'S GAUGE COCKS.**

$\frac{1}{2}$  inch.....\$2 25 |  $\frac{3}{4}$  inch.....\$3 00

**ASHCROFT'S SELF-CLEANING GAUGE COCKS.**

Size.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
Price, with Cleaner.....	2 00	2 25	2 37
Price, without Cleaner.....	1 87	2 00	2 25

**McNAB & CARR'S GAUGE COCKS.**

$\frac{1}{2}$  inch.....\$3 00 |  $\frac{3}{4}$  inch.....\$3 50

**MISSISSIPPI GAUGE COCKS.**

$\frac{1}{2}$  inch...\$1 75 |  $\frac{5}{8}$  inch...\$2 00 |  $\frac{3}{4}$  inch...\$2 50 |  $\frac{7}{8}$  inch...\$3 00

**COMMON GAUGE COCKS.**

$\frac{1}{2}$  inch.....\$1 00, net. |  $\frac{3}{4}$  inch.....\$1 25, net.

**STEAM WHISTLES. (Iron.)**

Size, inches,.....	4	6	8	10	12
Price.....	15 00	25 00	35 00	50 00	60 00

**STEAM WHISTLES. (Brass.)**

2 inch.	3 inch, with Lever.	4 inch, with Lever.	5 inch, with Lever.	6 inch, with Lever.
6 50	15 00	20 00	25 00	35 00

## APPURTENANCES

### FOR STEAM AND HOT WATER HEATING.

We give our personal attention to the construction of Steam and Hot Water Apparatus, for Warming Public Buildings, Stores, Cotton and Woollen Mills, and other Factories; Private Residences, Hospitals, Schools, Greenhouses, and for other purposes.

#### NASON'S BOILER.

SIZE.	Square feet of Grate Surface.	Square feet of Heating Surface.	Capacity 4 inch Pipe. FEET.	PRICE.
No. 1	2	52	600	125 00
No. 2	3½	80	950	200 00
No. 3	6½	140	1600	310 00
No. 4	7½	180	2000	400 00

#### WEATHERED'S BOILER.

(SEE FIG. NO. 10, SUPPLEMENT.)

Size .....	No. 2	No. 3	No. 4	No. 5
Capacity 4 inch Pipe, feet .....	200	300	450	900
Price .....	65 00	105 00	155 00	205 00

**HITCHINGS' BOILER.**

(SEE FIG. NO. 9, SUPPLEMENT.)

SIZE.	Length.	Width.	Height.	Capacity 4 inch Pipe. FEET.	Glass Exposure. SQ. FEET.	PRICE.
No. 14	3'-1"	1'-11"	3'-4"	350	1400	130 00
No. 15	3'-5"	2'-1"	3'-7"	600	2400	175 00
No. 16	4'-0"	2'-5"	3'-11"	950	3800	225 00
No 17	4'-9"	3'-0"	4'-5"	1500	6000	310 00

**PATENT VERTICAL TUBE RADIATORS.**

SEE FIGS. NOS. 12 AND 13, SUPPLEMENT.

This Radiator is generally acknowledged to be the most perfect Steam Radiator in use.

From its peculiar and simple construction, there is full provision for contraction and expansion in all its parts, and it is not liable to leak, as there are no packed joints; there is also positive and complete circulation throughout, and no possibility of the condensation remaining in any portion of the Radiator.

**STRAIGHT RADIATORS.****Standard Sizes.**
**PATTERN No. 1.**  
**SINGLE ROW OF TUBES.**  
 Outside width 4 inches.

No. of Tubes Lengthwise.	Outside length. FT. IN.	PRICE, plain.	PRICE, bronzed.
4	0 10	6 50	7 50
8	1 6	11 00	12 50
12	2 2	15 50	17 50
16	2 10	20 00	22 00
20	3 6	25 00	27 50
24	4 2	30 00	33 00

**PATTERN No. 2.**  
**TWO ROWS OF TUBES.**  
 Outside width 6½ inches.

No. of Tubes Lengthwise.	Total No. of Tubes.	Outside length. FT. IN.	PRICE, plain.	PRICE, bronzed.
4	8	0 11	11 00	12 50
8	16	1 7	20 00	22 00
12	24	2 3	30 00	33 00
16	32	2 11	40 00	44 00
20	40	3 7	50 00	55 00
24	48	4 3	60 00	66 00

**RADIATORS.** (Continued.)**STRAIGHT RADIATORS.**

<b>PATTERN No. 3.</b> <b>THREE ROWS OF TUBES.</b> Outside width 9½ inches.					<b>PATTERN No. 4.</b> <b>FOUR ROWS OF TUBES.</b> Outside width 12 inches.				
No. of Tubes Lengthwise.	Total No. of Tubes.	Outside length. FT. IN.	PRICE, plain.	PRICE, bronzed.	No. of Tubes Lengthwise.	Total No. of Tubes.	Outside length. FT. IN.	PRICE, plain.	PRICE, bronzed.
4	12	0 11	16 50	18 00	4	16	1 0	22 00	24 00
8	24	1 7	30 00	32 00	8	32	1 8	40 00	42 00
12	36	2 3	45 00	48 00	12	48	2 4	60 00	63 00
16	48	2 11	60 00	64 00	16	64	3 0	80 00	84 00
20	60	3 7	75 00	80 00	20	80	3 8	100 00	105 00
24	72	4 3	90 00	96 00	24	96	4 4	120 00	126 00
28	84	4 11	105 00	112 00	28	112	5 0	140 00	147 00
					32	128	5 8	160 00	168 00

**CIRCULAR RADIATORS.**

<b>PATTERN.</b>	<b>Outside Diameter. INCHES.</b>	<b>Price, plain.</b>	<b>Price, bronzed.</b>	<b>Marble Top. Extra.</b>
No. 1.—18 Tubes.	12	24 00	26 00	3 75
“ 2.—30 “	16½	40 00	43 00	5 50
“ 3.—54 “	20½	70 00	74 00	8 50
“ 4.—72 “	25	90 00	95 00	12 50

**CAST IRON SOCKET PIPE.**

Suitable for Sewer, Drain, Steam and Water Pipe.

Size of Pipe.....	2	3	4	5	6	8	10	12
Price.....	30	40	50	65	75	1 25	2 25	3 50

**FITTINGS FOR SOCKET PIPE.**

Size.....	2	3	4	5	6
T Branches.....	75	1 00	1 30	1 60	2 00
Quarter Bends.....	75	1 00	1 30	1 60	1 95
Eighth Bends.....	65	75	1 15	1 40	1 70
Return Bends.....		1 95	2 60	3 25	3 90
Double Hubs and Reducers .....	65	75	90	1 00	1 15
S Traps.....	1 95	2 25	3 25	4 00	5 25
Cross Head Branches.....	1 60	1 95	2 25	2 60	4 00

Greenhouse Wing Valves, \$10 00.

**STEAM TRAPS.**

Size.....	No. 0.	No. 1.	No. 2.	No. 3.	No. 4.
Price.....	16 00	20 00	28 00	35 00	65 00
Condensing Capacity 1 inch Pipe, feet...	2,000	4,000	8,000	12,000	15,000

**VALVE BOXES,****With Brass Spindle.**

12 inch.....\$20 00 | 15 inch.....\$28 00 | 18 inch.....\$33 00

**STEAM DISHES FOR HOTELS.**

No. 1.....\$12 00 | No. 2.....\$15 00 | No. 3.....\$18 00

**HYDRAULIC APPARATUS.****HYDRAULIC RAMS.**

(SEE FIG. NO. 29, SUPPLEMENT.)

Size.....	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
Price.....	8 00	10 00	12 00	16 00	36 00

**DOUGLAS' PUMPS.****PITCHER TOP PUMPS.**

(Fig. 60, page 25, Douglas' Catalogue.)

(SEE FIG. NO. 24, SUPPLEMENT.)

No. 1. — 2½ inch Bore, for ¾ or 1 inch Pipe.....	\$4 00
" 2. — 3 " " " 1 or 1½ " " .....	4 50
" 3. — 3½ " " " 1½ or 1½ " " .....	5 00
" 4. — 4 " " " 1½ or 2 " " .....	5 50

**DOUGLAS' PUMPS. (Continued.)****BOLT FASTENED REVOLVING STAND PUMP.***(Fig. 70, page 70, Douglas' Catalogue.)*

No. 0.—2	inch Bore, for	$\frac{3}{4}$	inch Pipe.....	\$3 50
" 1.—2 $\frac{1}{2}$	" " "	$\frac{3}{4}$ or 1	" " .....	4 00
" 2.—2 $\frac{1}{2}$	" " "	1 or 1 $\frac{1}{4}$	" " .....	4 50
" 3.—2 $\frac{3}{4}$	" " "	1 $\frac{1}{4}$ or 1 $\frac{1}{2}$	" " .....	5 00
" 4.—3	" " "	1 $\frac{1}{2}$ or 2	" " .....	5 50

**PITCHER SPOUT PUMP.***(Fig. 120, page 117, Douglas' Catalogue.)*

(SEE FIG. NO. 25, SUPPLEMENT.)

No. 1.—2 $\frac{1}{2}$	inch Bore, for	$\frac{3}{4}$ or 1	inch Pipe.....	\$4 00
" 2.—3	" " "	1 or 1 $\frac{1}{4}$	" " .....	4 50
" 3.—3 $\frac{1}{2}$	" " "	1 $\frac{1}{4}$ or 1 $\frac{1}{2}$	" " .....	5 00
" 4.—4	" " "	1 $\frac{1}{2}$ or 2	" " .....	5 50

**PITCHER SPOUT OUT-DOOR PUMP.**

With Wrought Iron Set Lengths.

*(Fig. 103, page 32, Douglas' Catalogue.)*

(SEE FIG. NO. 25, SUPPLEMENT.)

No. 1.—2 $\frac{1}{2}$	inch Bore, with 3 feet Set Length .....	\$6 25
" 2.—3	" " " " " " .....	7 00
" 3.—3 $\frac{1}{2}$	" " " " " " .....	8 00
" 4.—4	" " " " " " .....	9 00



**DOUGLAS' PUMPS.** (Continued.)**SUCTION AND FORCE PUMP WITH AIR BARREL.**

(Fig. 91, page 62, Douglas' Catalogue.)

No. 2.	—	2½	inch Bore,	12	gals. per minute,	\$10 00;	with Cock,	\$11 50
" 3.	—	2¾	" " "	15	" "	10 50;	"	12 00
" 4.	—	3	" " "	22	" "	11 00;	"	13 00
" 6.	—	3½	" " "	30	" "	14 00;	"	17 00

**SOUTHERN ENGINE YARD PUMP.**

(Fig. 152, page 28, Douglas' Catalogue.)

(SEE FIG. NO. 27, SUPPLEMENT.)

Suitable for 1 or 1½ inch Pipe. Capacity, 12 gallons per minute.

Price, with 3 feet of Hose and Discharge Pipe, \$12 00.

**COWING & CO'S PUMPS.****IRON CISTERN PUMPS ON BASE.**

(SEE FIG. NO. 32, SUPPLEMENT.)

No. 1.	—	2½	inch Cylinder.....	\$4 00
" 2.	—	2½	" " .....	4 50
" 3.	—	2¾	" " .....	5 00
" 4.	—	3	" " .....	5 00

**COWING'S PUMPS.** *(Continued.)***PITCHER SPOUT PUMPS.***(Fig. 214, Cowing's Catalogue.)*

(SEE FIG. NO. 30, SUPPLEMENT.)

No. 1.—3 inch Cylinder.....	\$4 00
" 2.—3½ " " .....	4 50
" 3.—4 " " .....	5 00
" 4.—4½ " " .....	5 50

**DEEP WELL AND FORCE PUMP ON PLANK.**

(SEE FIG. NO. 35, SUPPLEMENT.)

No. 6.—2½ inch Cylinder.....	\$14 00
" 6.—3 " " .....	<del>14 00</del>

**ANTI-FREEZING YARD WELL PUMP.**

(SEE FIG. NO. 34, SUPPLEMENT.)

No. 5½.—2½ inch Cylinder.....	\$10 00
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**ANTI-FREEZING LIFT PUMPS.****With Wrought Iron Set Lengths.***(Fig. 219, Cowing's Catalogue.)*

No. 3.....	\$7 00	No. 4.....	\$7 50	No. 5.....	\$8 00
------------	--------	------------	--------	------------	--------

**FORCE PUMPS.**

No. 0.—2 inch Cylinder.....	\$3 50
" 00.—2½ " " .....	9 00

**BOILER PUMP,****For Hand or Power.**

(SEE FIG. NO. 36, SUPPLEMENT.)

No. 0.—2 inch Cylinder.....	\$12 00
" 00.—2½ " " .....	14 00

Boiler Pump, with Metallic Valves, each ~~\$5 00~~ 3 00, net, extra.

**COWING'S PUMPS. (Continued.)****LIFT AND FORCE PUMP,****With Pitman and Guide and Air Chamber.***(Fig. 226, Cowing's Catalogue.)*

Calibre of Cylinder, 3 inches; Price, Iron, \$17 00; Brass, \$37 00.

Extra for Brass Cock, \$5 00, net.

**COWING'S PATENT POINTS.**

For Driving Wells.

	BRASS WIRE GAUZE.		WITHOUT GAUZE.		WITH TIN JACKET.	
	1	2	1	2	1	2
Length, feet.						
Price, net..	2 25	4 00	1 75	3 00	2 75	5 00

**LEWIS' PATENT POINTS.**

2 feet Long, Galvanized; Price, \$4 00, net.

**COPPER PUMPS.**

NO.	SIZE. INCHES.	Iron Top.	Copper Top.	With Air Chamber.	Extra Lengths per Joint of 2 feet.
1	2½	6 12	6 50	8 25	2 55
2	2¾	6 50	6 87	8 75	2 70
3	3	6 87	7 25	9 25	2 85

### MORRELL'S SUBMERGED DEEP WELL AND FORCE PUMP.

(SEE FIG. NO. 37, SUPPLEMENT.)

SIZE.	Weight. LBS.	Capacity per Minute. GALLS.	Price, Iron.	Price, Galv'ed.	Price, Brass.
1	70	20	25 00	33 00	65 00
2	100	40	30 00	40 00	85 00
3	130	80	60 00	75 00	125 00
4	160	160	100 00	125 00	200 00
5	210	320	150 00	175 00	250 00

### JOHNSON'S CHAMPION FORCE PUMP,

For Extinguishing Fires.

(SEE FIG. NO. 33, SUPPLEMENT.)

This Pump may also be used for Washing Windows, Carriages, Decks of Vessels, etc.; Watering Streets and Gardens, Sprinkling Fluids and Liquids on Trees, Plants and Shrubbery. It is portable and compact, and will throw six gallons of water per minute from 30 to 40 feet.

Price.....\$9 00.

### JOHNSON'S PATENT DRIP PUMP,

For Gas Companies. Fitted for  $\frac{1}{4}$  inch Pipe.

Price.....\$10 00.

### CLARK'S LINEN ENGINE HOSE.

Will not mildew, and warranted to stand 700 lbs. pressure per square inch.

Size, inches.	1	1½	2	2½	3
Price .....	40	70	80	82	95

**RUBBER HYDRANT HOSE. (Three Ply.)**

Internal Diameter.....	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price per foot.....	27	36	42	48	60	72	96

**RUBBER ENGINE HOSE. (Four Ply.)**

Internal Diameter.....	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price per foot.....	32	44	51	58	73	87	116

**HOSE COUPLINGS.**

SIZE. INCHES.	Price for Rubber and Linen.	Price for Leather.	Price with Patent Tails and Screws, for Rubber.
2	2 80	3 00	4 00
$2\frac{1}{4}$	3 12	3 25	4 37
$2\frac{1}{2}$	3 45	3 62	5 00

**HOSE PIPES,  
With Cocks.**

Size, inches.....	$\frac{3}{4}$ (SHORT.)	$\frac{1}{2}$ (LONG.)	1 (LONG.)	$1\frac{1}{4}$ (LONG.)	$1\frac{1}{2}$ (LONG.)
Price.....	1 55	1 87	2 80	3 12	3 50

### HOSE PIPES, Without Cocks.

Size, inches.....	$\frac{3}{4}$ (LONG.)	1 (LONG.)	$1\frac{1}{2}$ (LONG.)	$1\frac{1}{2}$ (LONG.)	2 3 ft. long. Ser. Noz.	$2\frac{1}{2}$ 3 ft. long. Ser. Noz.	$2\frac{1}{2}$ 3 ft. long. Ser. Noz.
Price.....	1 25	1 55	1 87	2 20	5 62	5 62	5 62

### 20 inches Long.

Size, inches.	2 Screw Noz.	$2\frac{1}{2}$ Screw Noz.	$2\frac{1}{2}$ Screw Noz.	2 Sold'r'd Noz.	$2\frac{1}{2}$ Sold'r'd Noz.	$2\frac{1}{2}$ Sold'r'd Noz.
Price.....	4 75	4 75	4 75	3 50	3 50	3 50

### HOSE SPRINKLERS.

$\frac{3}{4}$  inch..42 cts. | 1 inch..55 cts. |  $1\frac{1}{2}$  inch..55 cts. |  $1\frac{1}{2}$  inch..55 cts.

### ZANE'S SELF-CLOSING BIBBS.

Screwed Ends for Iron Pipe.

$\frac{3}{8}$  inch.....\$2 50 |  $\frac{1}{2}$  inch.....\$3 00 |  $\frac{3}{4}$  inch.....\$3 50

### PLAIN AND HOSE BIBB COCKS. (Finished.)

Size.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$1\frac{1}{2}$	2
Plain.....	1 50	2 37	3 00	4 00	5 50	8 00	11 00	16 00
Hose.....			3 12	4 50	6 00	8 75	11 75	17 00

**PLAIN AND HOSE BIBB COCKS. (Rough.)**

Size.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Plain.....	2 12	2 75	3 50	4 75	7 25	9 50	14 00
Hose.....		3 00	4 00	5 25	8 00	10 50	15 00

**STOP AND WASTE COCKS.**

Screwed, for Iron Pipe.

Size.....	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
Price.....	2 25	2 50	3 25	4 00	6 50	8 00

**COMPRESSION BIBB COCKS,**

For Iron Pipe. (Finished.)

**Plain.****Hose.**

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	Size. ....	$\frac{1}{2}$	$\frac{3}{4}$
Price.....	1 85	2 10	Price.....	2 00	2 25

**COPPER BALLS. (Tinned.)**

6 inch...\$1 25 | 7 inch...\$1 75 | 8 inch...\$3 00 | 10 inch...\$5 00

**FITTS' WATER CLOSET VALVES.** $\frac{1}{2}$  inch.....\$2 50, net. |  $\frac{3}{4}$  inch.....\$3 50, net.

# SEAMLESS DRAWN BRASS TUBES AND FINE THREAD BRASS FITTINGS.

Designed for Water Purposes.

(SEE FIG. NO. 38, SUPPLEMENT.)

Size of Tubes, outside.	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	1	1 $\frac{1}{2}$
Per foot, plain.....	25	30	45	60	70
Per foot, tinned .....	30	35	50	70	80

## FITTINGS.

## Prices.

Couplings.....	20	25	35	40	45
Elbows .....	26	35	48	53	65
Tees.....	30	40	55	60	85
Crosses.....	45	60	85	90	1 25
Caps and Nipples....	20	25	35	40	45
Reducers.....	15	20	25	30	35
Soldering Nipples....	30	38	45	50	65

Fittings with ears for fastening, 20 per cent. extra.

## TAPS, DIES AND DIE PLATES.

For Fine Thread Brass Tube Fitting.

Size.....	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	1	1 $\frac{1}{2}$
Taps .....	2 50	2 75	3 00	3 50	4 50
Dies .....	3 50	3 50	3 50	3 50	3 50

Die Plates (without Dies).....\$11 00.



**COMPRESSION BALL COCKS.**

Screwed End for Iron Pipe.

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$
Price.....	2 00	2 50	3 50	5 00	7 50

**SINK PLUGS AND SOCKET.**1 inch, Price.....\$2 00 |  $1\frac{1}{4}$  inch, Price.....\$2 25**STEAM BOILER FEED PUMPS,**

With Spherical Valve Chambers.

(SEE FIG. NO. 28, SUPPLEMENT.)

These Pumps have been in use for the last 20 years, and are unsurpassed for neatness and efficiency.

$1\frac{1}{2}$  inch..\$15 00 | 2 inch..\$20 00 |  $2\frac{1}{2}$  inch..\$25 00 | 3 inch..\$35 00

**ADAMS' BOILER PUMPS.**

3 inch Plunger.....\$50 00 |  $3\frac{1}{2}$  inch Plunger.....\$55 00

**COLUMN BOILER PUMP,**

With Pulleys Complete.

(SEE FIG. NO. 31, SUPPLEMENT.)

Diameter of Cylinder 2 inches ; Stroke 3 inches. Price \$30 00.

**GIFFARD'S INJECTOR,**

For Feeding Boilers.

Size.....	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7
Cubic feet of water discharged per hour at 20 lbs. pressure.....	9.	21.04	39.6	62 5	90.6	123.75
Cubic ft. at 40 lbs. pressure.	10.4	24.58	45.88	72.34	104.84	143.2
Cubic ft. at 60 lbs. pressure.	11.8	28.12	52.16	82.18	119.09	162.65
Cubic ft. at 80 lbs. pressure.	13.2	31.66	58.44	92.02	133.33	182.1
Price, Iron .....	50 00	62 00	75 00	97 00	122 00	147 00
Price, Brass.....	62 00	75 00	97 00	122 00	147 00	172 00

Larger sizes furnished at manufacturer's prices.

**BLAKE'S PATENT STEAM PUMP.**

NO.	Diameter Steam Cyl.	Diameter Water Cyl.	Stroke.	Gallons per minute.	Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.	PRICE.
	IN.	IN.	IN.		IN.	IN.	IN.	IN.	
1	3½	2	4	10 to 20	½	½	¾	½	150 00
2	4	2½	5	25 to 50	½	¾	1	¾	200 00
3	5½	3½	6½	40 to 80	½	¾	1½	1	250 00
4	6	3¾	6½	50 to 100	¾	1	1½	1½	275 00
5	7½	4½	9	100 to 200	1	1½	2	1½	375 00
6	8	5	9	140 to 280	1	1½	2½	2	400 00
7	10½	6	12	175 to 350	1½	2	3	2½	475 00
8	12	7	12	200 to 400	1½	2½	4	3	550 00
9	14	8	12	250 to 500	2	3	4	3	600 00
10	14	14	12	800 to 1600					
11	14½	12	34	1000 to 2000					To order.
12	14½	16	34	1500 to 3000					

## KNOWLES' PATENT STEAM PUMP.

NUMBER.	Diameter of Steam Cylinder in inches.	Diameter of Water Cylinder in inches.	Length of Stroke in inches.	Gallons per Stroke.	Strokes per Minute.	Size of Steam Pipe, Supply.	Size of Steam Pipe, Exhaust.	Size of Suction.	Size of Discharge.	PRICE.
1	3	2	4	.06	1 to 300	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	1	150 00
2	4	2 $\frac{1}{2}$	5	.10	1 to 300	$\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{2}$	1	200 00
3	5	3 $\frac{1}{4}$	7	.25	1 to 275	$\frac{3}{4}$	1	2	1 $\frac{1}{2}$	250 00
4	5 $\frac{1}{2}$	3 $\frac{3}{4}$	7	.34	1 to 275	$\frac{3}{4}$	1	2	1 $\frac{1}{2}$	275 00
5	7	4 $\frac{1}{2}$	10	.69	1 to 250	1	$1\frac{1}{4}$	3	2 $\frac{1}{2}$	375 00
6	7 $\frac{1}{2}$	5	10	.85	1 to 250	1	$1\frac{1}{4}$	3	2 $\frac{1}{2}$	400 00
7	10	6	12	1.46	1 to 200	$1\frac{1}{2}$	2	4	Two 3	475 00
8	12	7	12	1.99	1 to 200	2	2 $\frac{1}{2}$	5	3 $\frac{1}{2}$	550 00
9	14	8	12	2.61	1 to 200	2	2 $\frac{1}{2}$	5	3 $\frac{1}{2}$	600 00
10	16	10	16	5.43	1 to 200	2	2 $\frac{1}{2}$	6	4	800 00
11	18	12	24	11.75	1 to 180	2 $\frac{1}{2}$	3	8	6	These sizes made to order.
12	20	14	24	15.99	1 to 180	2 $\frac{1}{2}$	3	10	8	
13	24	18	24	26.43	1 to 150	3	4	12	10	
14	30	22	24	39.49	1 to 150	4	5	14	12	

The above Pumps are calculated for feeding Steam Boilers, and forcing water under great pressure, or to a high elevation.

Please remember that in all Steam Pumps, the diameter of Water Cylinder gives the capacity, and the diameter of Steam Cylinder the amount of steam used, or cost of running. We claim our Pump will carry a larger diameter of water and with less diameter of steam. This is a great advantage: We claim less steam and more work, and in addition we claim our prices lower than any other, and much more economical; and for simplicity, durability, and efficiency, defy comparison, notwithstanding others may give more extravagant figures on circulars.

## TERMS CASH.

When ordering a Pump please answer the following questions in regard to the service to which it is to be applied:

1. Whether for Hot or Cold Water?
2. For High or Low Pressure?
3. For Salt or Fresh Water?
4. For supplying Boiler, Tank, or for Fire Purposes?

WE ARE PREPARED TO CONTRACT FOR THE FURNISHING OF

# COAL GAS WORKS,

On the most approved plans,

FOR LIGHTING FACTORIES, PUBLIC INSTITUTIONS, SUGAR ESTATES,  
MANUFACTURING ESTABLISHMENTS, &c.

Parties requiring such kind of apparatus are respectfully requested to call at our office, where full sets of plans and working drawings can be examined, and detailed statements of the cost furnished.

## BOILERS.

### Horizontal and Vertical Tubular Boilers,

*Furnished and Set with Latest Improvements.*

We are enabled to exhibit results which will strongly commend our Boilers to the attention of those desirous of securing the greatest economy of fuel.

We are constantly adding to our Catalogue of Goods new and novel articles and improvements, intending to keep pace with the progress of invention in all matters relating to the application and uses of Steam.

## FACTORY AND LAUNDRY SUPPLIES,

MANUFACTURED BY J. J. WALWORTH & CO.

### IMPROVED TUBULAR WATER HEATER.

(SEE FIG. NO. 16, SUPPLEMENT.)

In this Heater, the water passes three times through the length of the heater in sections of tubes, the exhaust steam entirely surrounding them, filling the shell of the heater; entering and discharging upon opposite sides, while the water is received and delivered at the ends.

The sizes enumerated we keep constantly on hand.

Larger Heaters, with wrought iron shells, we make to order, suitable for boilers from 50 to 250 horse power.

Length, FEET.	Diameter, INCHES.	PRICE, Iron Tubes.	With Seamless Brass Tubes.
3	6	30 00	40 00
3	8	35 00	45 00
2	15	75 00	125 00
4	15	125 00	200 00

**HEATER TUBES.**

Size.....	6 inch.	8 inch.	15 in. 2 ft. long	15 in. 4 ft. long.
Price, Iron.....	5 00	6 00	15 00	26 00
Price, Brass.....	15 00	17 00	41 00	82 00

**IMPROVED GLASS WATER GAUGE.**

(SEE FIG. NO. 19, SUPPLEMENT.)

No. 1.—	Screwed for $\frac{1}{2}$ inch Pipe ;	Glass $\frac{5}{8} \times 12$ inches ;	Price.....	\$12 00
“ 2.—	“ “ $\frac{1}{2}$ “ “ “	$\frac{5}{8} \times 15$ “	Price.....	15 00
“ 3.—	“ “ $\frac{3}{4}$ “ “ “	$\frac{3}{4} \times 16$ “	Price.....	20 00

**SCOTCH GLASS TUBES,****For Water Gauges.**

These Tubes are warranted in every respect equal to any in the market, are of our own importation, and are offered at the lowest market price.

Every Tube warranted to stand 500 pounds pressure per square inch, and will not change color.

DIAMETER, INCHES.	PRICE.	DIAMETER, INCHES.	PRICE.
$\frac{1}{2} \times 10$	40	$\frac{3}{4} \times 13$	55
$\frac{1}{2} \times 11$	40	$\frac{3}{4} \times 14$	60
$\frac{1}{2} \times 12$	45	$\frac{3}{4} \times 15$	60
$\frac{1}{2} \times 13$	45	$\frac{3}{4} \times 16$	65
$\frac{1}{2} \times 14$	50	$\frac{3}{4} \times 17$	70
$\frac{1}{2} \times 15$	55	$\frac{3}{4} \times 18$	75
$\frac{1}{2} \times 16$	60	$\frac{3}{4} \times 19$	80
$\frac{5}{8} \times 10$	40	$\frac{3}{4} \times 20$	85
$\frac{5}{8} \times 11$	40	$\frac{3}{4} \times 22$	95
$\frac{5}{8} \times 12$	45	$\frac{7}{8} \times 24$	1 05
$\frac{5}{8} \times 13$	45	$\frac{7}{8} \times 24$	1 50
$\frac{5}{8} \times 14$	50	$\frac{7}{8} \times 30$	2 00
$\frac{5}{8} \times 15$	55	$\frac{7}{8} \times 36$	2 50
$\frac{5}{8} \times 16$	60	1 $\times$ 24	2 00
$\frac{5}{8} \times 17$	65	1 $\times$ 30	2 60
$\frac{5}{8} \times 18$	70	1 $\times$ 36	3 25

**GLUE AND PASTE KETTLES.****Double Cased and Bolted.**

No. 1.....\$20 00 | No. 2.....\$30 00

**GLUE HEATERS.**

With 5 Holes and Pipes complete .....\$30 00  
 With 2 Holes, double..... 15 00  
 With 1 Hole, single, small.....\$4 00; large, 6 00

**STEAM JACKET KETTLES,**

For Hotels, Eating Houses, Prisons, Alms Houses, Asylums, Hospitals, and all Institutions where cooking is done on a large scale. For Tanners, Curriers, Tallow, Oil, Lard and Soap manufacturers, they are nearly indispensable.

(SEE FIG. NO. 14, SUPPLEMENT.)

**Flanged and Bolted.**

Capacity, in gallons.....	10	15	25	30	50	60	80	125
Price, dollars .....	25	30	50	60	100	110	160	175

**Cast Iron Seamless.**

Capacity, galls.	5	10	15	20	25	30	40	50	60	75	100
Price, dollars..	30	40	50	63	80	84	100	110	127	150	184

**VAPOR POTS.**

For Cotton Weaving Rooms. Price, \$2 50.

**LAUNDRY STANDS.** $\frac{3}{4}$  inch....60 cts. | 1 inch....75 cts. | Rollers for same....62 cts., net.

**QUINN'S DEVICE,  
For Repairing Leaky Boiler Tubes.**

(SEE FIG. NO. 38, SUPPLEMENT.)

Outside Diameter..	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	2 $\frac{3}{4}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4	4 $\frac{1}{2}$	5
Price, Iron Tubes..	1 50	1 75	2 00	2 25	2 50	2 75	3 00	3 50	4 00	4 50
Price, Copper Tubes.	2 00	2 25	2 50	2 75	3 00	3 25	3 50	4 00	4 50	5 00

**Keys for Same.**

1 $\frac{1}{4}$  to 2 $\frac{3}{4}$  inch, 50 cts. | 3, 3 $\frac{1}{4}$  and 3 $\frac{1}{2}$  inch, 75 cts. | 4, 4 $\frac{1}{2}$  and 5 inch, \$1 00

**PATENT PIPE LEAK STOPPER.**

(SEE FIG. NO. 15, SUPPLEMENT.)

Size.....	$\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2
Price.....	70	75	80	90	1 00	1 20

**PATENT MALLEABLE IRON OILER.**

(SEE FIG. NO. 64, SUPPLEMENT.)

Price per dozen.....\$5 00.

**CHAPMAN'S IMPROVED WATER BACK TUYERE IRON.**

(SEE FIG. NO. 39, SUPPLEMENT.)

Price, with Air Gate and Lever, complete.....	\$22 00
" without " " .....	20 00

**ASHCROFT'S LOW WATER DETECTOR.**

Price.....\$50 00.

**CLARK'S PATENT STEAM AND FIRE REGULATOR.**

(SEE FIG. NO. 11, SUPPLEMENT.)

Size No. 1. — Under 5 horse		for 100 horse Boilers..		\$95 00
Boilers.....		" 120 " "	..	100 00
No. 2	for 10 horse Boilers,	" 140 " "	..	105 00
	" 15 " "	" 160 " "	..	110 00
	" 20 " "	" 180 " "	..	115 00
	for 30 horse Boilers....	" 200 " "	..	120 00
No. 3, for high pres.	" 40 " "	" 250 " "	..	125 00
	" 50 " "	" 300 " "	..	130 00
	" 60 " "	" 350 " "	..	135 00
	" 70 " "	" 400 " "	..	140 00
	" 80 " "	" 450 " "	..	145 00
	" 90 " "	" 500 " "	..	150 00

In estimating the horse power of Boilers —

10 sq. ft. of heating surface for plain cylinder Boilers eq. to 1 horse power.

12 " " " (fire and flue) flue " " 1 " "

16 " " " (fire and tubes) tubular " " 1 " "

**Rubber Diaphragms for Clark's Regulator.**

No. 1....\$2 00 | No. 2....\$2 50 | No. 3....\$3 50 | No. 4....\$4 00

**NEW ENGLAND ANTI INCRUSTATOR.**

Price from \$50 00 to \$90 00, according to capacity of Boiler.

**HYDRAULIC CLOTHES WASHER AND WRINGER.**

(SEE FIG. NO. 17, SUPPLEMENT.)

Size.....	No. 1	No. 2	No. 3	No. 4	No. 5
Capacity, shirts.....	6	8	10	12	25
Price without Wringer	16 00	17 00	19 00	22 00	50 00
Price with Wringer ..	24 00	25 00	27 00	32 00	60 00



**POWER WASHING MACHINES.**

For Laundries and Hotels.

(SEE FIG. NO. 18, SUPPLEMENT.)

No. 1, with Wringer.....\$300 00 | No. 2, with Wringer.....\$400 00

**THE WHELPY & STORER PULVERIZER.**

(SEE FIG. NO. 68, SUPPLEMENT.)

This Pulverizer reduces to an impalpable powder with great rapidity, Coal, Ores, Plaster, Drugs, &c.

Its advantages in the use of coal, for the generation of steam and for heating furnaces, are from 30 to 50 per cent. over the usual method.

By its use the finest dust coal, which costs but little, and heretofore comparatively useless, is utilized and made equal if not superior to the best lump coal, giving an intense body of flame which extends the entire length of a boiler.

It makes sulphurous coals as valuable as others for heating purposes.

Circulars, giving full explanations of the operation of Whelpy & Storer's process of applying pulverized fuel, furnished by JAMES J. WALWORTH & Co., Agents.

Inside Diameter. INCHES.	Revolutions per Minute.	Average Horse Power.	Yield of Coal per Hour. LBS.	PRICE.	ROYALTY.
12	2250	2	200	300 00	Two dollars per horse power per annum.
18	1800	4	300	500 00	
24	1500	8	600	700 00	

In estimating horse power, 15 square feet of heating surface for sectional and tubular boilers, 12 square feet for flue, and 10 square feet for cylinder boilers, equal one horse power.

**PROSSER'S BOILER TUBE EXPANDER.**

Size.....	1 $\frac{3}{4}$	2	2 $\frac{1}{4}$	2 $\frac{1}{2}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	4
Price, Spring.....	15 00	15 00	18 00	20 00	30 00	35 00	40 00	45 00
Price, Guide Ring..	18 00	20 00	25 00	30 00	40 00	45 00	50 00	60 00

**STEAM GAUGES.**

Made by the American Steam Gauge Company, and fully warranted.

**Bourdon, and Lane's Improvement.**

No. 1, Brass Case, 8 $\frac{1}{2}$ inch Dial, Plain.....	\$48 00
" 2, " 6 $\frac{3}{4}$ " Lane's Imp't, Locomotive, Steam- boat, or Stationary.....	30 00
" 2, " 6 $\frac{3}{4}$ " Old Style, High or Low Pressure, or Vacuum.....	30 00
" 3, Iron Case, 6 $\frac{3}{4}$ " Old Style, High or Low Pressure, or Vacuum.....	25 00
" 3, " 6 $\frac{3}{4}$ " High or Low Pressure, Lane's Imp't,	28 00
" 4, Brass Case, 6 " Old Style, High or Low Pressure..	25 00
" 4, " 6 " Lane's Improvement, Locomotive..	28 00
" 4, Iron Case, 6 " Old Style .....	23 00
" 4, " 6 " Lane's Improvement.....	25 00
" 5, Brass Case, 5 $\frac{1}{2}$ " " " Stationary...	20 00
" 5, Iron Case, 5 $\frac{1}{2}$ " Old Style, Stationary .....	15 00
" 6, " 5 $\frac{1}{2}$ " Lane's Improvement, Stationary..	18 00
" 7, Brass Case, 3 " For Back Pressure, &c .....	12 00

**Allen's Patents.**

No. 00, Brass Case, 4 $\frac{1}{4}$ inch Dial, Stationary.....	\$15 00
" 00, Iron Case, 4 $\frac{1}{4}$ " " .....	12 00

## TUBE SCRAPERS AND BRUSHES.

### PRATT'S CONTRACTING AND EXPANDING TUBE SCRAPER.

(SEE FIG. NO. 6, SUPPLEMENT.)

From 1 to 4 inches.....<sup>300</sup>~~\$6~~ 00 | From 4 to 6 inches.....<sup>700</sup>~~\$7~~ 00

### ELASTIC TUBE SCRAPER.

(SEE FIG. NO. 21, SUPPLEMENT.)

Price per inch of diameter.....\$1 00.

### FLAT STEEL WIRE TUBE BRUSHES.

(SEE FIG. NO. 23, SUPPLEMENT.)

These Brushes being made of Spring Tempered Flat Steel Wire (Tinned), gives greater elasticity, adding more than double to the wearing surface.

The wires are firmly soldered to the shaft, which will allow the tubes to be cleaned while hot.

In ordering brushes, give the outside diameter of tubes.

The brushes are calculated to be about one-eighth of an inch smaller than the inside diameter of the tubes.

Outside Diameter of Tube. INCHES.	PRICE EACH.	Diameter of Brush. INCHES.
1 $\frac{1}{4}$	1 45	1 $\frac{1}{8}$
1 $\frac{1}{2}$	1 55	1 $\frac{3}{16}$
1 $\frac{3}{4}$	1 70	1 $\frac{7}{16}$
2	1 90	1 $\frac{1}{2}$
2 $\frac{1}{4}$	2 10	1 $\frac{5}{8}$
2 $\frac{1}{2}$	2 30	2 $\frac{1}{8}$
2 $\frac{3}{4}$	2 50	2 $\frac{3}{8}$
3	2 80	2 $\frac{1}{2}$
3 $\frac{1}{4}$	3 00	2 $\frac{5}{8}$
3 $\frac{1}{2}$	3 30	3 $\frac{1}{8}$
3 $\frac{3}{4}$	3 50	3 $\frac{3}{8}$
4	3 75	3 $\frac{1}{2}$
4 $\frac{1}{2}$	4 00	4 $\frac{1}{8}$
5	4 25	4 $\frac{3}{8}$
6	4 75	5 $\frac{1}{8}$
7	5 50	6 $\frac{1}{8}$

**CHRISTOFFEL'S BOILER TUBE BRUSH.**

Size of Tubes outside...	2 in. and under.	2½	2½	2¾	3	3½	3½	3¾	
Price.....	3	50	3 75	4 00	4 25	4 50	4 75	5 00	5 25
Size of Tubes.....	4	4½	4½	4¾	5	5½	5½	5¾	6
Price.....	5 50	5 75	6 00	6 25	6 50	6 75	7 00	7 25	7 50

**MORSE'S TUBE SCRAPER.**

(SEE FIG. NO. 22, SUPPLEMENT.)

Size.....	2	2½	2½	2¾	3	3½	3½	3¾	4
Price.....	1 50	1 65	1 80	1 95	2 10	2 25	2 40	2 55	2 70

**BUSH'S PATENT FLUE BROOM.**

For Cleaning the Flues of Flue Boilers.

Single Broom for Pole.....	}	\$1 20 per inch Diameter.
Double " " Rope.....		

**WHALEBONE FLUE BRUSHES.**

With Ends Screwed to connect with Wrought Iron Pipe.

Size.....	1½	1¾	2	2½	2½	3	3½	3½	4
Price.....	70	75	75	80	80	90	1 00	1 00	1 20

**BRASS GONGS.**

Size.....	2	2½	3	4	5	6	7	8	9	10
Price.....	75	87	1 00	1 25	2 50	3 00	4 50	6 25	8 25	10 00

**HAIR FELTING.**

Price per square foot—

¼ inch thick..6½ cts. | ½ inch..8 cts. | ¾ inch..9 cts. | 1 inch..11 cts.

**FUSIBLE PLUGS.**

¾ inch.....\$1 30 | 1 inch.....\$1 50

**RUBBER PACKING.**

Gum Packing, with cloth insertion, in sheets of all thicknesses,

from  $\frac{3}{32}$  of an inch upward..... 80 c. per lb.

Thinner sizes of same, say  $\frac{1}{16}$  of an inch or less..... 95 c. per lb.

Gaskets, Washers, Rings, &c., of *Pure* Vulcanized Rubber,

with or without cloth insertion.....\$1 10 per lb.

Extra Pure Vulcanized Rubber Valves, for Hot and Cold Water

Pumps, Vacuum Pumps, Foot and Delivery Valves... 1 10 per lb.

**HEMP PACKING, FLAX PACKING, SOAPSTONE PACKING,  
RED LEAD, GAS PIPE CEMENT, GAS HOUSE TILE,  
PIPE CLAY, KAOLIN, FIRE BRICK.**

**BABBITT METAL.**

No. 1..... cts. per lb. | No. 2..... cts. per lb.

**TAYLOR'S PATENT SELF-OILER.**

Per dozen —

1½ inch..\$8 00 | 2 inch..\$12 00 | 2½ inch..\$12 00 | 3½ inch..\$24 00

**WICKERSHAM'S AMERICAN OIL FEEDER.**

Size.....	No. 3 2 inch.	No. 4 3 inch.	No. 5 2 inch. For Loose Pulleys.	No. 7 3 inch.	No. 8 2 inch. Brass for Locom'tiv's.	FEEDERS per dozen.
Price.....	1 10	1 25	2 00	1 25	3 00	3 00

**GAS AND STEAM FITTERS' TOOLS, &c.****GAS FITTERS' AUGERS. (Philadelphia Pattern.)**

Size.....	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Price.....	63	75	87	1 25	1 50	1 75	2 00	2 30

**BAXTER'S ADJUSTABLE "S" WRENCHES.**

Size, inches.	4	6	8	10	12	15
Price.....	50	75	1 00	1 50	2 00	2 50

**WALWORTH'S PATENT SOLID DIE PLATE.**(SEE FIG. NO. 62 $\frac{1}{2}$ , SUPPLEMENT.)

We call the attention of our Customers to this new and desirable Die Plate for Cutting Threads on Iron Pipe. It combines the desirable qualities of **STRENGTH AND LIGHTNESS**, and is believed to be the best tool ever got up for this purpose.

No. 1 Plate, with Dies $2\frac{1}{2} \times \frac{3}{4}$ , cutting $\frac{1}{4}$ , $\frac{3}{8}$ , $\frac{1}{2}$ , $\frac{3}{4}$ and 1 inch, R.H.	\$26 00
" $1\frac{1}{2}$ " " " $3 \times \frac{3}{4}$ , " $\frac{3}{4}$ , 1 and $1\frac{1}{4}$ " "	24 00
" 2 " " " $4 \times \frac{7}{8}$ , " $1\frac{1}{4}$ , $1\frac{1}{2}$ and 2 " "	30 00
" 3 " " " $5 \times 1\frac{1}{4}$ , " $2\frac{1}{2}$ and 3 " "	55 00
Extra Dies, R. H. or L. H., for No. 1 Plate.....	\$3 00
" " " " " " $1\frac{1}{2}$ " .....	3 50
" " " " " " 2 " .....	5 00
" " " " " " 3 " .....	11 00

**BENDING MACHINES.**

For bending  $\frac{3}{4}$  in. Pipe, \$17 00, net. | For bending 1 in. Pipe, \$20 00, net.

**PIPE SCREWING MACHINES.****HAND SCREWING MACHINE No. 1.**

For  $\frac{1}{4}$  to  $1\frac{1}{4}$  inch Pipe, with Universal Chuck and Cutting-off and Screwing Head. Solid Dies.

Complete.....\$100 00.

**HAND SCREWING MACHINE No. 2.**

For  $\frac{1}{4}$  to 2 inch Pipe, with Fly-wheel, Universal Chuck, and Cutting-off and Screwing Head. Solid Dies.

Complete.....\$250 00.

**POWER SCREWING MACHINE No. 2.**

For  $\frac{1}{4}$  to 2 inch Pipe, with Cone Pulleys and Countershaft, Universal Chuck, and Cutting-off and Screwing Head. Solid Dies.

Complete.....\$275 00.

**SCREWING MACHINE No. 3, IMPROVED.**

For  $\frac{3}{8}$  to 4 inch Pipe, with Countershaft, Universal Chuck, and Cutting-off and Screwing Head.

(Made to use Solid Dies  $\frac{3}{8}$  to 2 inch, and Cutter Dies  $2\frac{1}{2}$  to 4 inches.)

Complete.....\$675 00.

**HILL'S PATENT SOLID DIE.**

(SEE FIG. NO. 55, SUPPLEMENT.)

We claim for this Die the following advantages:

- 1st. It is self-feeding, and therefore requires no exertion to start it.  
 2d. It cuts perfectly free. One side of the tooth being forward of the other, it operates on the principle of a "diamond point" Lathe Tool, thereby obviating the friction produced by the ordinary Die, with blunt, straight tooth, which might be said to scrape out the thread when compared with this improved Die.

3d. The particular advantage of this Die, for Pipe work, is that the teeth follow each other in succession in cutting over the seam in the pipe, which prevents the Die from catching in and splitting open the seam, as is often the trouble with the ordinary Die.

The Standard Gas-pipe Dies are made to fit the WALWORTH PATENT DIE PLATE.

**SIZE OF DIE.**

$2\frac{1}{2} \times \frac{3}{4}$	Cuts $\frac{1}{4}, \frac{3}{8}, \frac{1}{2}, \frac{3}{4}$ and 1 inch	Fits No. 1 Die Plate	Each	\$3 00
$3 \times \frac{3}{4}$	" $\frac{3}{4}, 1, 1\frac{1}{2}$	" " " $1\frac{1}{2}$	"	3 50
$4 \times \frac{7}{8}$	" $1\frac{1}{2}, 1\frac{1}{2}, 2$	" " " 2	"	5 00
$5 \times 1\frac{1}{2}$	" $2\frac{1}{2}$ and 3	" " " 3	"	11 00

Price of Plate, with one set of Right Hand Dies —

No. 1...\$26 00 | No.  $1\frac{1}{2}$ ...\$24 00 | No. 2...\$30 00 | No. 3...\$55 00

**GAS AND BURNER PLYERS.**

We would call your attention to our List of Gas Fitters' Plyers. They are manufactured with great care, of superior quality, and will be found to be the best article in the market.

**GAS PLYERS.**

(SEE FIG. NO. 61, SUPPLEMENT.)

Size, inches.....	8	9	10	11	12	13	14
Price, per doz.....	14 00	16 50	17 50	19 00	21 00	25 00	28 00



**GAS AND BURNER PLYERS. (Continued.)****BURNER PLYERS.**

(SEE FIG. NO. 58, SUPPLEMENT.)

5 inch, per doz.....	\$ 9 00
6 " " .....	10 50

**BURNER PLYERS. (2 Holes.)**

(SEE FIG. NO. 59, SUPPLEMENT.)

7 inch, per doz.....	\$11 50
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**BURNER PLYERS. (Philadelphia Pattern.)**

(SEE FIG. NO. 60, SUPPLEMENT.)

6½ inch, per doz.....	\$11 50
7½ " " .....	14 00

**HUBER'S GAS AND BURNER PLYERS.****GAS PLYERS.**

Size.....	No. 1	No. 2	No. 3	No. 4	No. 5
Price, Black.....	88	1 00	1 40	1 60	2 00
Price, Polished.....	1 00	1 20	1 60	1 80	2 25

**BURNER PLYERS.**

Black.....	\$1 20	Polished.....	\$1 40
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**STANWOOD'S PATENT PIPE CUTTER.**

(SEE FIG. NO. 51, SUPPLEMENT.)

NUMBER.	Cuts Pipe.	Retail Price, Case Hardened.	Retail Price, Steel Faced.	Per Dozen, Wholesale, Case Hardened.	Per Dozen, Wholesale, Steel Faced.
1	$\frac{3}{4}$ to $\frac{1}{8}$ in.	7 00	9 00	72 00	96 00
2	2 to 1 in.	9 00	12 00	84 00	120 00
3	3 to 2 in.	18 00	23 00	180 00	240 00

Cutter Wheels, Retail.....	No. 1...\$0 62	No. 2...\$0 75	No. 3...\$1 25
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Cutter Wheels, per doz.....	No. 1... 5 00	No. 2... 6 00	No. 3...12 00
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**FREEMAN'S PATENT PIPE CUTTER.**

(SEE FIG. NO. 50, SUPPLEMENT.)

No. 1; Cuts $\frac{1}{8}$ to 1 inch; Price.....	\$ 9 00
" 2; " 1 to 2 " " .....	12 00
" 3; " 2 to 3 " " .....	23 00

**FREEMAN'S PATENT PIPE TONGS.**

No. 1; For Pipe $\frac{1}{8}$ to $\frac{1}{2}$ ; Price.....	\$ 3 00
" 2; " " $\frac{1}{2}$ to $1\frac{1}{4}$ ; " .....	4 00
" 3; " " $1\frac{1}{4}$ to $2\frac{1}{2}$ ; " .....	5 00
" 4; " " $1\frac{1}{2}$ to 3 ; " .....	8 00
" 5; " " $2\frac{1}{2}$ to 4 ; " .....	10 00
" 6; " " 3 to 5 ; " .....	14 00

**BROWN'S PATENT PIPE TONGS.**

(SEE FIG. NO. 62, SUPPLEMENT.)

No. 1; For Pipe $\frac{1}{8}$ to $\frac{3}{4}$ ; Price.....	\$ 3 00
" $1\frac{1}{2}$ ; " " $\frac{3}{8}$ to 1 ; " .....	3 50
" 2; " " $\frac{1}{2}$ to $1\frac{1}{4}$ ; " .....	4 00
" 3; " " 1 to 2 ; " .....	5 00
" 4; " " $1\frac{1}{2}$ to 3 ; " .....	9 00
" 5; " " $2\frac{1}{2}$ to 4 ; " .....	12 00
" 6; " " 3 to 5 ; " .....	16 00
" 7; " " 4 to 7 ; " .....	20 00

**PIPE THREAD GAUGES.**

Size.....	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Price....	25	25	25	25	35	50	60	75	1 00	1 30	1 75	2 25

1 Set Pipe Gauges complete, from  $\frac{1}{8}$  to 2 inches, \$3 00, net.

**TAPS, TONGS AND DRILLS.**

Size.	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
Taps.	1 75	1 75	2 25	2 75	3 50	4 50	5 50	6 75	8 00	12 00	16 50		
Tongs.	85	1 00	1 25	1 50	2 10	2 50	3 10	3 75	4 75	6 00	7 00	8 00	9 00
Drills.	75	75	1 00	1 25	1 50	1 75	2 00	2 50	3 00				

**CHAPMAN'S PATENT SELF-FEEDING AND IMPROVED RATCHET DRILLS.**

(SEE FIGS. NO. 52, 53 AND 54, SUPPLEMENT.)

Size.....	No. 1	No. 2	No. 3	No. 4	No. 5
Length of Handle, ins.	10	12	15	17	20
Price, with Self-feed..	9 25	12 00	14 50	17 50	21 00
Price, Plain Improved.	8 50	10 50	13 00	15 00	18 50

Boiler Ratchet; Plain, \$8 50; Self-feeding, \$9 50.

**BENCH VISES.**

J. J. Walworth & Co.'s Pattern.

5 inch Jaw... ..\$20 00.

**NASON'S PIPE VISE.**

No. 1.....\$15 00 | No. 2.....\$18 00 | No. 3.....\$30 00

**FOSTER'S PATENT GRIP WRENCH.**

(SEE FIG. NO. 65, SUPPLEMENT.)

10 inch.....\$1 75 | 14 inch.....\$2 50 | 18 inch.....\$3 50

**WEBSTER'S PATENT COMBINED WRENCH, PIPE WRENCH AND PIPE CUTTER.**

(SEE FIG. NO. 67, SUPPLEMENT.)

12 inch, with Tools for Pipe  $\frac{1}{8}$  to  $\frac{3}{4}$ ; Price.....\$4 00  
 15 " " "  $\frac{1}{8}$  to  $1\frac{1}{2}$ ; " ..... 5 00  
 18 " " "  $\frac{1}{8}$  to 2; " ..... 6 00  
 21 " " "  $\frac{1}{8}$  to  $2\frac{1}{2}$ ; " ..... 7 00

**Extra Cutters.**

For 12 inch..25 cts. | For 15 and 18 inch..30 cts. | For 21 inch..35 cts.

**Extra Clasps.**

For 12 inch..50 cts. | For 15 and 18 inch..62 cts. | For 21 inch..65 cts.

**MOORE'S TRIPLE ACTION RATCHET WRENCH.**

(SEE FIG. NO. 67, SUPPLEMENT.)

SIZE.	Size of Square Socket. INCHES.	Size of Six Square Socket. INCHES.	PRICE, with one of either Hubs.
1	$\frac{3}{8}$ - $\frac{1}{2}$ - $\frac{5}{8}$	$\frac{5}{8}$ - $\frac{3}{4}$	3 00
2	$\frac{3}{4}$ - $\frac{7}{8}$	$\frac{7}{8}$ -1	4 00
3	1- $1\frac{1}{4}$	$1\frac{1}{8}$ - $1\frac{3}{8}$	5 00
4	$1\frac{3}{8}$ - $1\frac{1}{2}$	$1\frac{1}{2}$ - $1\frac{3}{4}$	7 00

**Extra Wrench Hubs.**

For Nos. 1 and 2.....50 cts. each. | For Nos. 3 and 4.....75 cts. each.

**MOORE'S TRIPLE ACTION RATCHET DRILL.**

(SEE FIG. NO. 66, SUPPLEMENT.)

---

No. 1. — 8 inch Lever.....	\$ 5 00
" 2. — 10 " " .....	6 50
" 3. — 14 " " .....	8 00
" 4. — 16 " " .....	10 00

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**TRIPP'S TIGHT-GRIP WRENCH.**

(SEE FIG. NO. 56, SUPPLEMENT.)

The special merits of this Wrench are, its great strength, its rigid grip, its simplicity and durability.

The body and handle are in one piece, and of form combining strength, lightness and convenience for use.

It is made of best Malleable and Swedes Iron.

Price.....\$1 75 each.

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**TUFT'S PATENT DRY GAS METERS.**


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Capacity, Lights.....	2	3	5	10	20	30	50	100
Price.....	9 25	10 00	12 50	15 50	22 00	28 00	42 50	90 00

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**LAVA GAS TIPS AND GAS BURNERS.**

Price Lists furnished on application.

(SEE FIGS. NOS. 40 TO 49, SUPPLEMENT.)

Lava Gas Tips of superior quality, manufactured by us and furnished at low prices.

These Tips are manufactured from a non-conducting material, and being perfectly non-corrosive and much harder than steel, they will always retain the same size burning orifice.

A full assortment always on hand.

---

**CAST IRON LAMP-POSTS AND LANTERNS.**

Posts with wrought iron frames for Lanterns.....\$20 00, net.  
Copper Lanterns .....\$10 00, net. | Tin Lanterns.....\$9 00, net.

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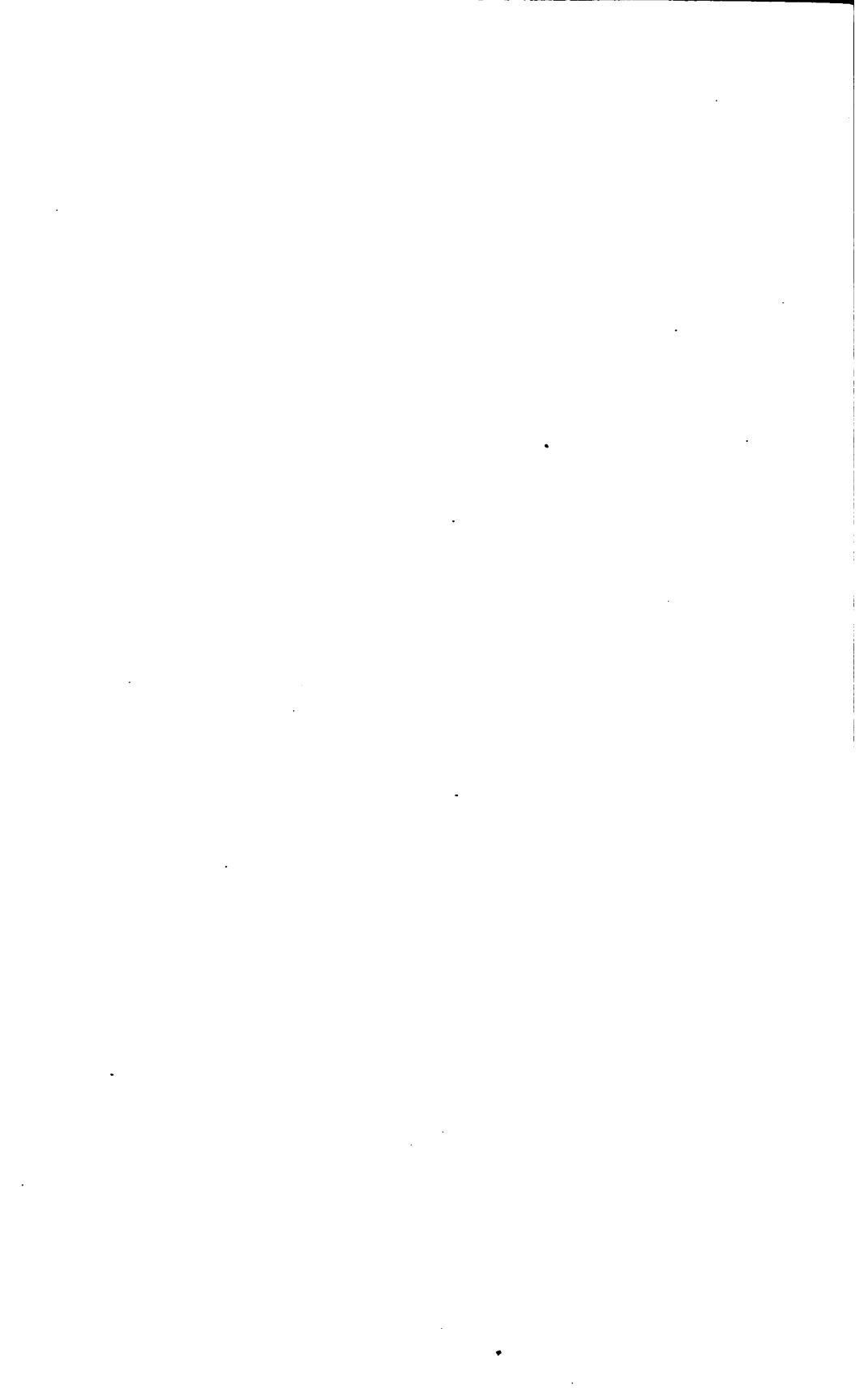
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ILLUSTRATED SUPPLEMENT

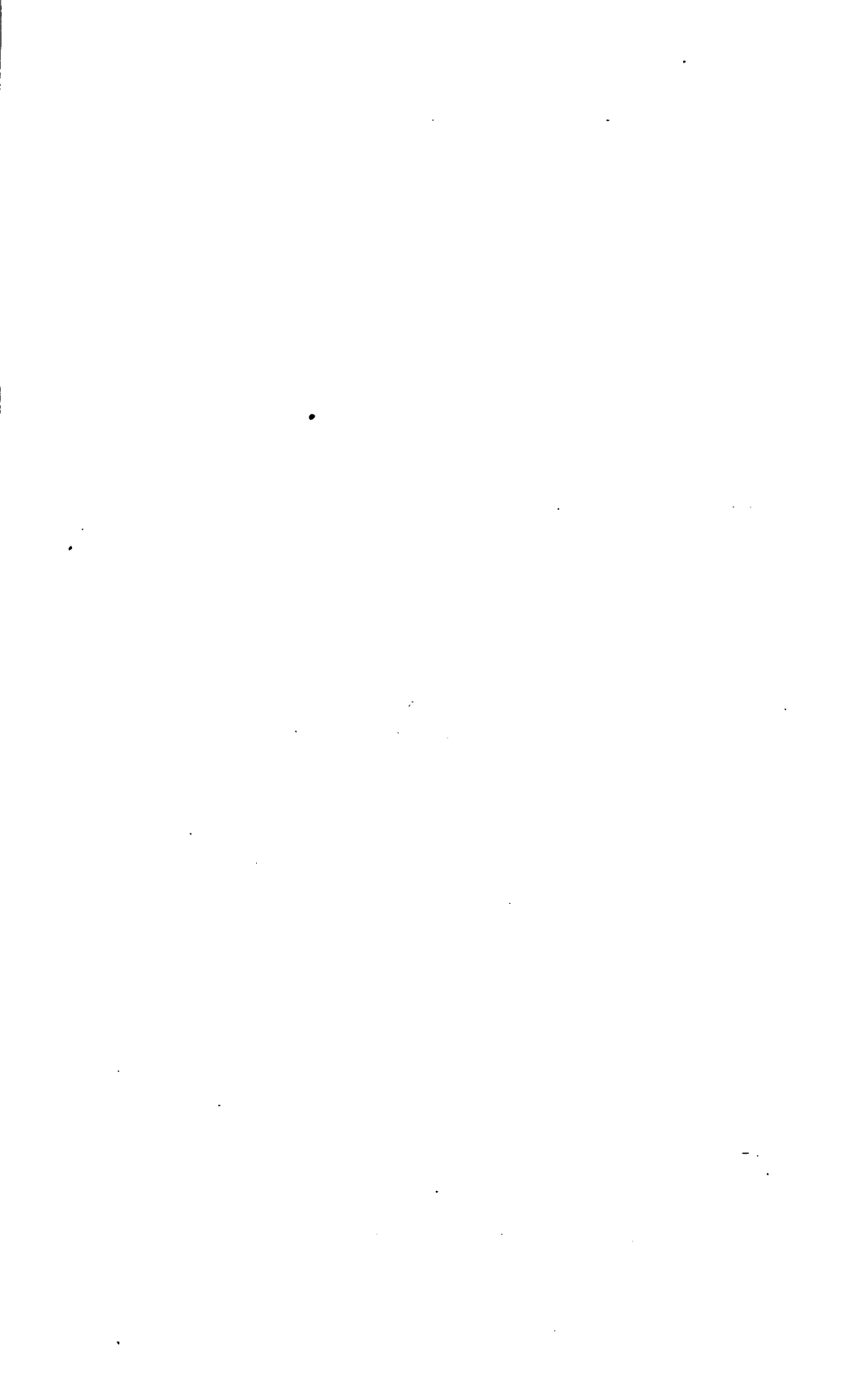
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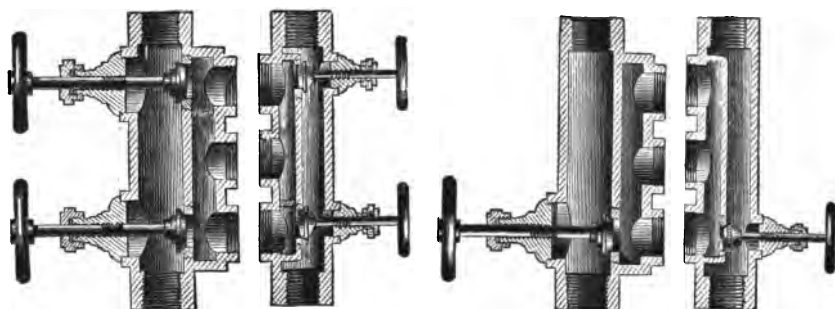
J. J. WALWORTH & CO.'S

CATALOGUE.

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**FOR REFERENCE TO CUTS SEE PRECEDING PAGES.**





Nos. 1 & 2, Supply.      Nos. 4 & 5, Return.      No. 3, Supply.      No. 6, Return.

FIG. 1. — WALWORTH'S PATENT MANIFOLDS. PAGE 11.

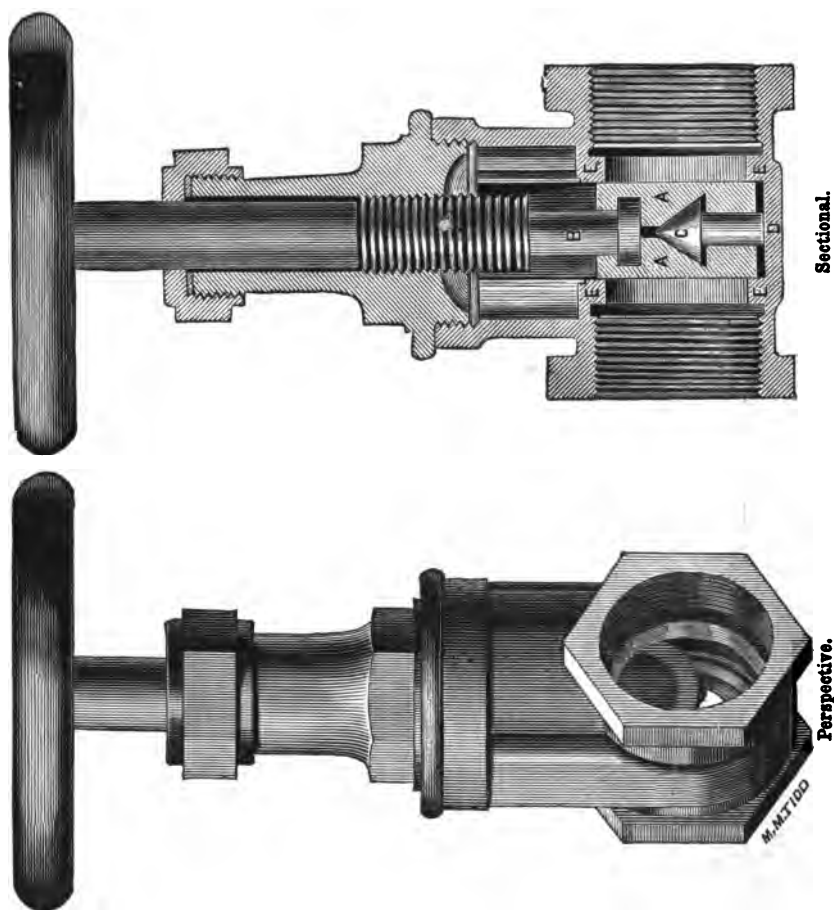
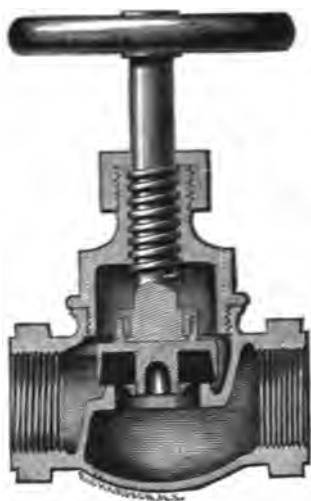


FIG. 2. — FEET'S PATENT VALVE. PAGE 16.



**FIG. 3.—JENKINS' COMPRESSION VALVE. PAGE 16.**



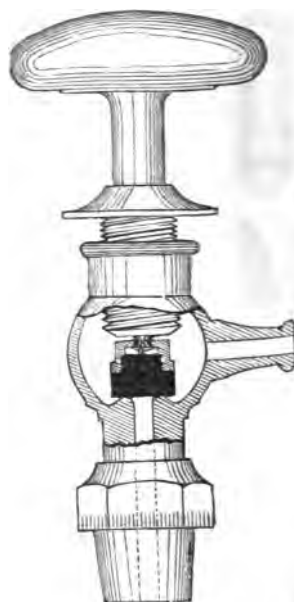
**FIG. 4.—LUDLOW'S SLIDING STOP VALVE. PAGES 16 and 17.**



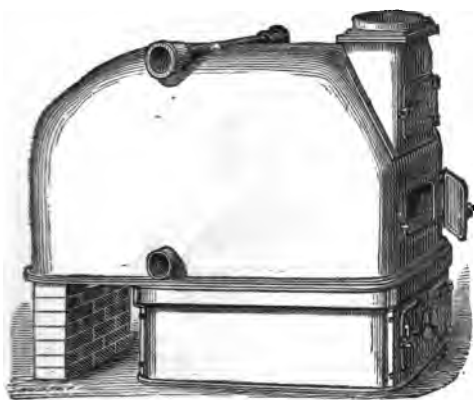
**FIG. 6.—PRATT'S TUBE SCRAPER. PAGE 80.**



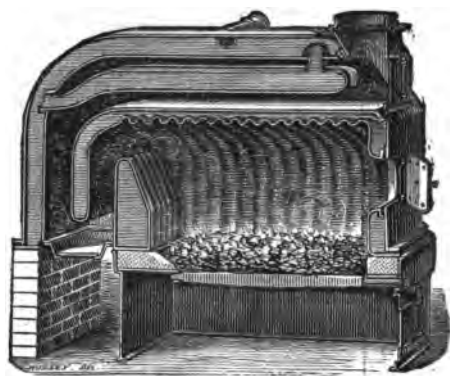
**FIG. 7.—STORER'S PATENT SUET LUBRICATOR. PAGE 24.**



**FIG. 8.—JENKINS' COMPRESSION GAUGE COCK. PAGE 24**

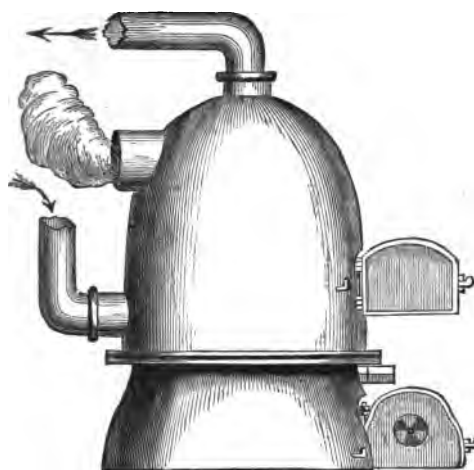


Perspective.

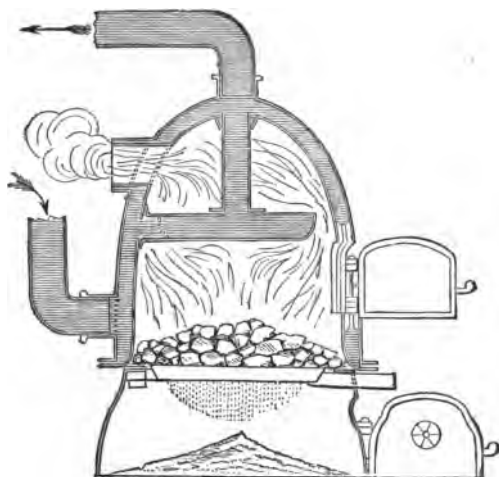


Sectional.

FIG. 9.—HITCHINGS' PATENT BOILER. PAGE 27.



Perspective.



Sectional.

FIG. 10.—WETHERED & CHEREVOY'S BOILER. PAGE 26.

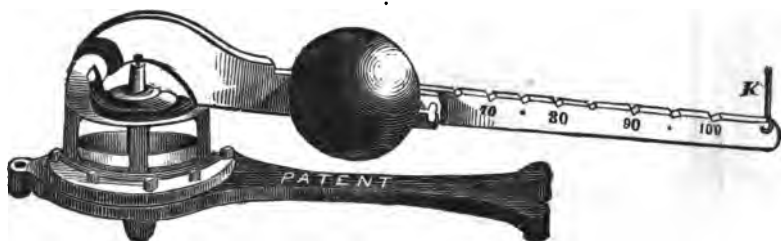
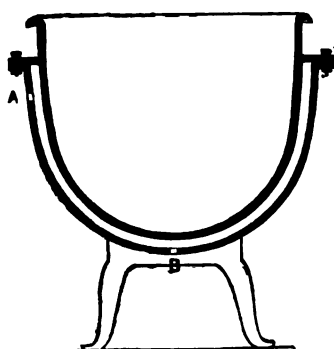


FIG. 11.—CLARK'S PATENT STEAM AND FIRE REGULATOR. PAGE 47.



FIG. 12.—PATENT VERTICAL TUBE RADIATORS. PAGE 27.—FIG. 13.



Sectional.



Perspective.

FIG. 14.—STEAM JACKET KETTLES. PAGE 45.



FIG. 15.—PATENT PIPE LEAK STOPPER. PAGE 46.



(Part Sectional.)

FIG. 16. — IMPROVED TUBULAR WATER HEATER. PAGE 43.



HYDRAULIC CLOTHES WASHER,

FIG. 17. — FAMILY WASHER.  
PAGE 47.

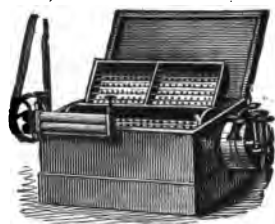


FIG. 18. — POWER LAUNDRY  
WASHER. PAGE 48.



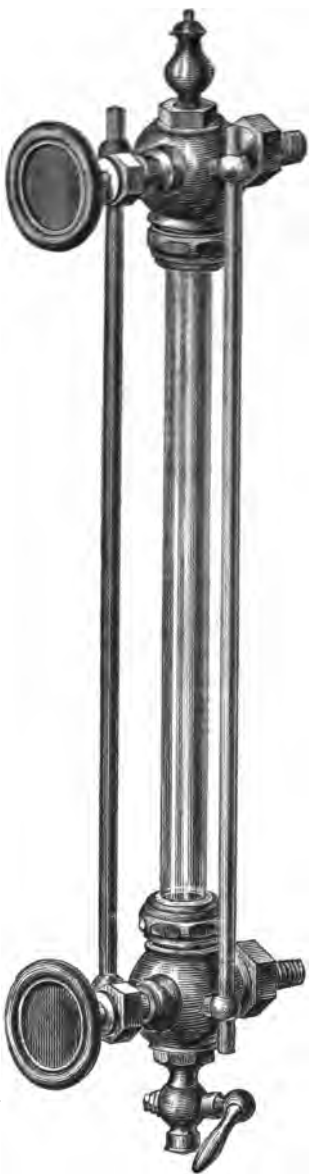


FIG. 19.—IMPROVED GLASS  
WATER GAUGE. PAGE 44.

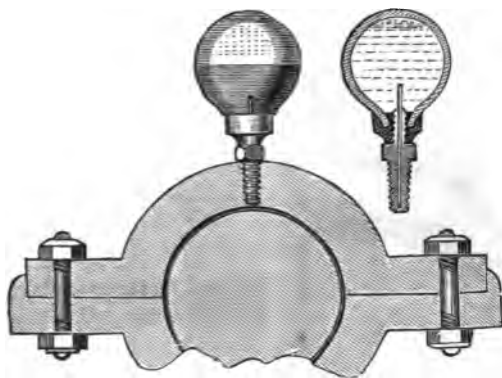


FIG. 20.—TAYLOR'S PATENT SELF-OILER. PAGE 52.



FIG. 21.—ELASTIC TUBE  
SCRAPER. PAGE 50.

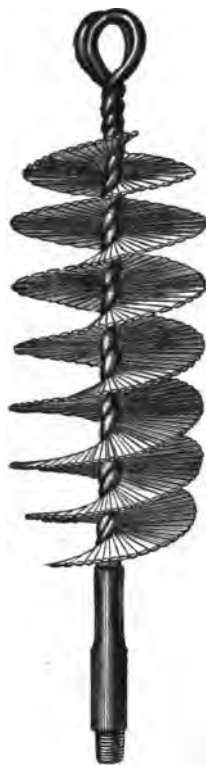


FIG. 23.—STEEL WIRE  
TUBE BRUSH.  
PAGE 50.



FIG. 22.—MORSE'S TUBE SCRAPER. PAGE 51.

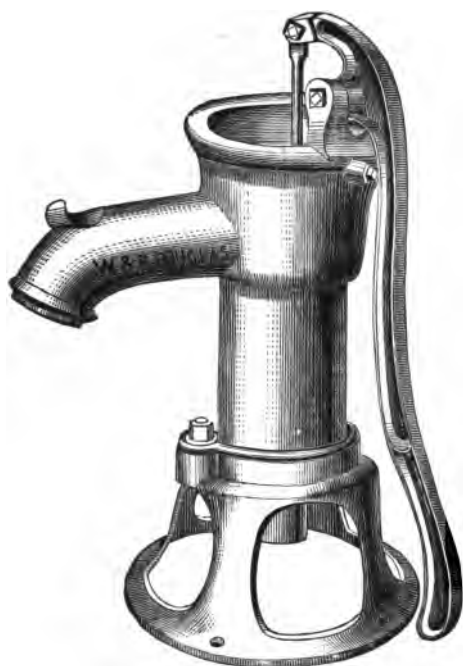


FIG. 24. — PATENT PITCHER-TOP PUMP. PAGE 30.



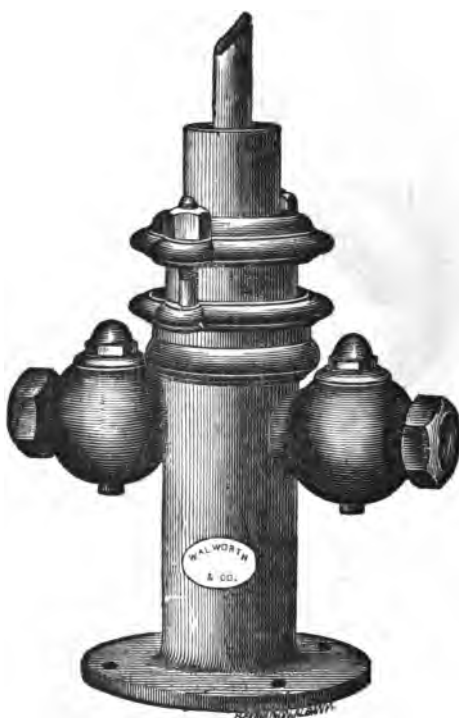
FIG. 26. — PITCHER-SPOUT OUT-DOOR-PUMP. PAGE 31.



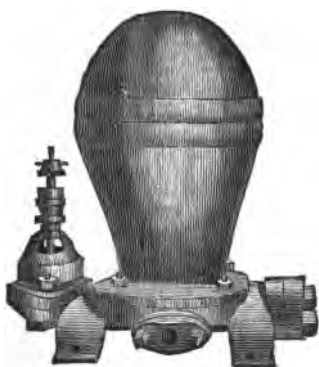
FIG. 25. — BOLT FASTENED PITCHER-SPOUT PUMP. PAGE 31.



**FIG. 27.—PATENT SOUTHERN  
ENGINE YARD PUMP.  
PAGE 32.**



**FIG. 28.—BOILER FEED PUMP. PAGE 40.**



**FIG. 29.—HYDRAULIC RAM.  
PAGE 30.**



**FIG. 30.—PATENT PITCHER-SPOUT  
PUMP. PAGE 33.**

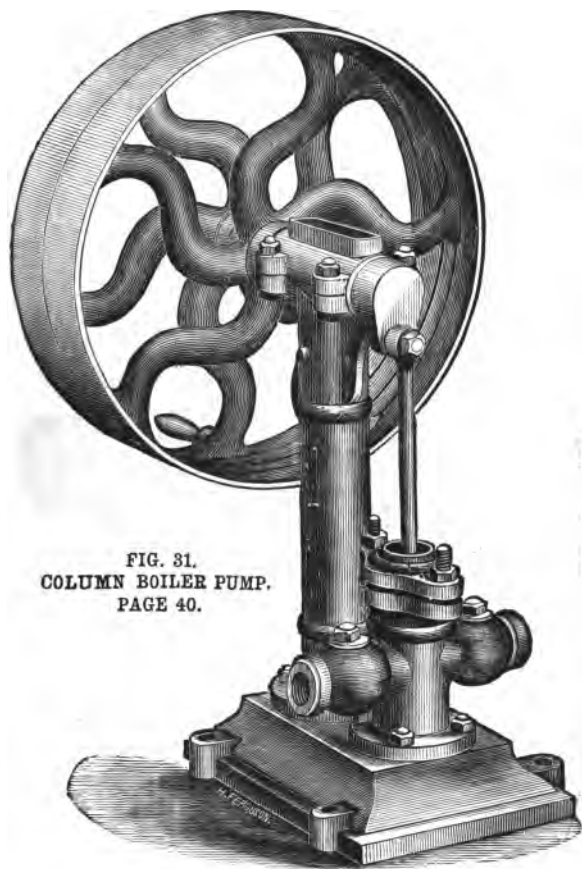


FIG. 31.  
COLUMN BOILER PUMP.  
PAGE 40.

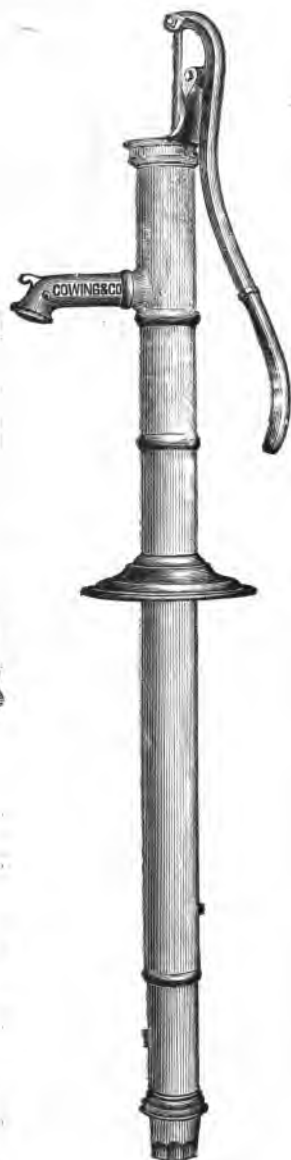


FIG. 34 - No. 51-2 YARD WELL  
PUMP, ANTI-FREEZING.  
PAGE 38.



FIG. 32.  
IRON CISTERN  
PUMP  
PAGE 32.

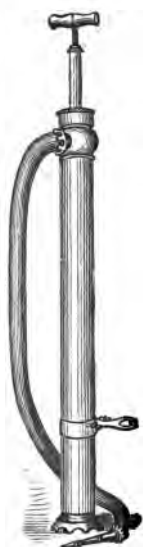


FIG. 33. - JOHNSON'S CHAMPION FORCE PUMP. PAGE 35.

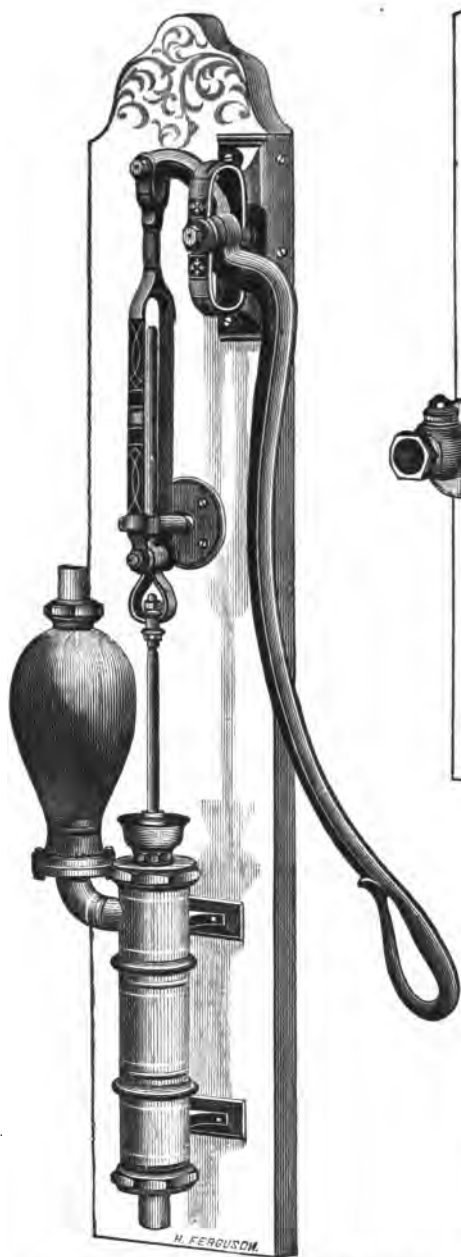


FIG. 35. - DEEP WELL AND FORCE PUMP,  
ON PLANK. PAGE 33.

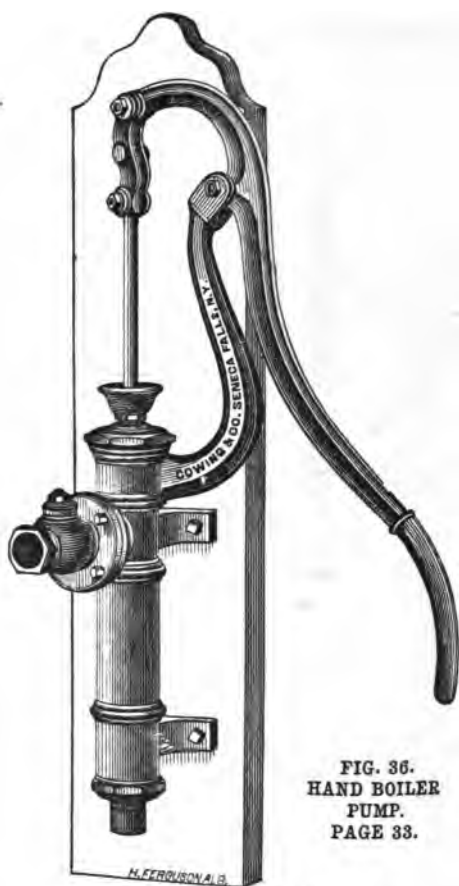


FIG. 36.  
HAND BOILER  
PUMP.  
PAGE 33.

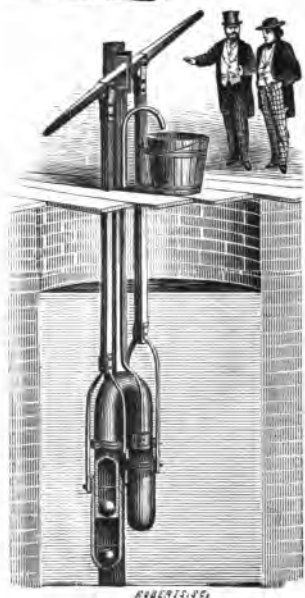


FIG. 37. - MORRELL'S SUBMERGED PUMP. PAGE 35.

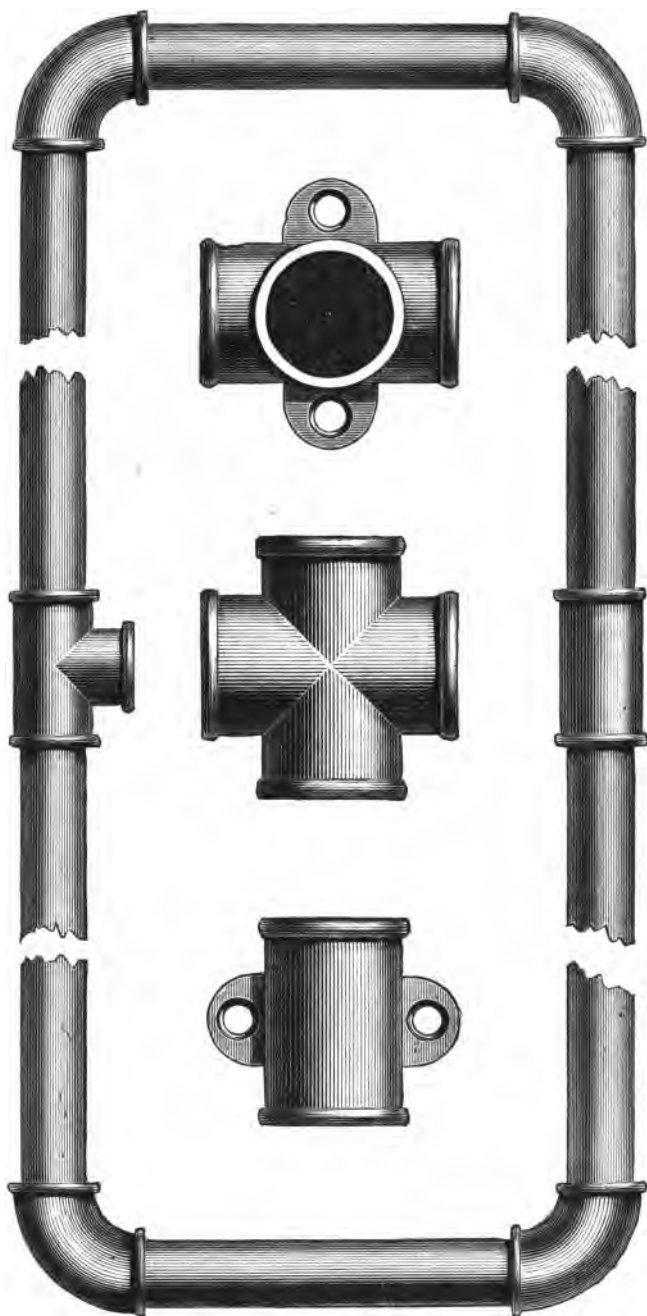


FIG. 38.—SEAMLESS BRASS TUBE AND FITTINGS FOR WATER. PAGE 39.

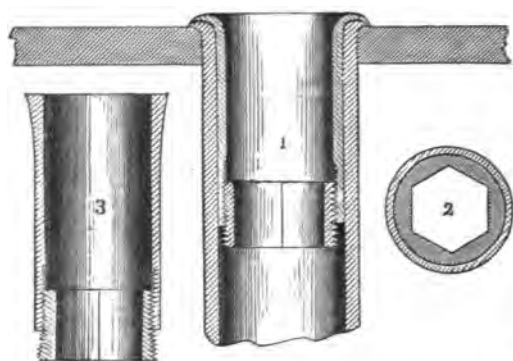


FIG. 38. - QUINN'S DEVICE FOR REPAIRING LEAKY BOILER TUBES. PAGE 46.



FIG. 40. - DOUBLE OR CYLINDER BURNER (DRAWN BRASS).



FIG. 41. - BRASS CYLINDER BURNER, IRON OR LAVA TIPS.

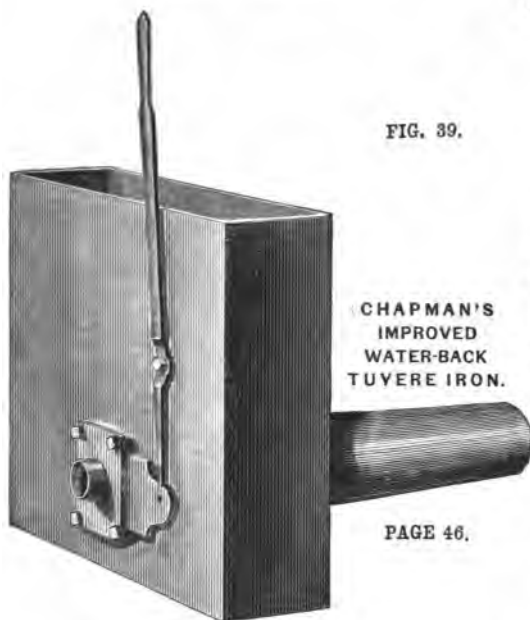


FIG. 39.

CHAPMAN'S  
IMPROVED  
WATER-BACK  
TUYERE IRON.

PAGE 46.



FIG. 42. - IRON BURNER (FISHTAIL).



FIG. 43. - IRON BURNER (BATWING).



FIG. 44. - LAVA TIP (FISHTAIL).



FIG. 45. - LAVA TIP (BATWING).



FIG. 46. - FISHTAIL SCOTCH TIP.



FIG. 47. - BATWING SCOTCH TIP.



FIG. 48. - BRASS PARAGON BURNER.



FIG. 49. - IRON PILLAR.

FIG. 50.—FREEMAN'S PATENT PIPE  
CUTTER. PAGE 57.

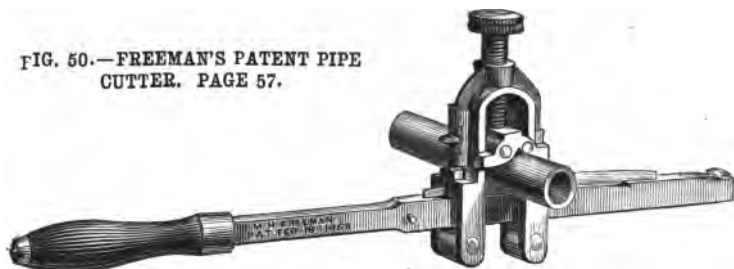


FIG. 51.—STANWOOD'S  
PATENT PIPE CUT-  
TER. PAGE 57.

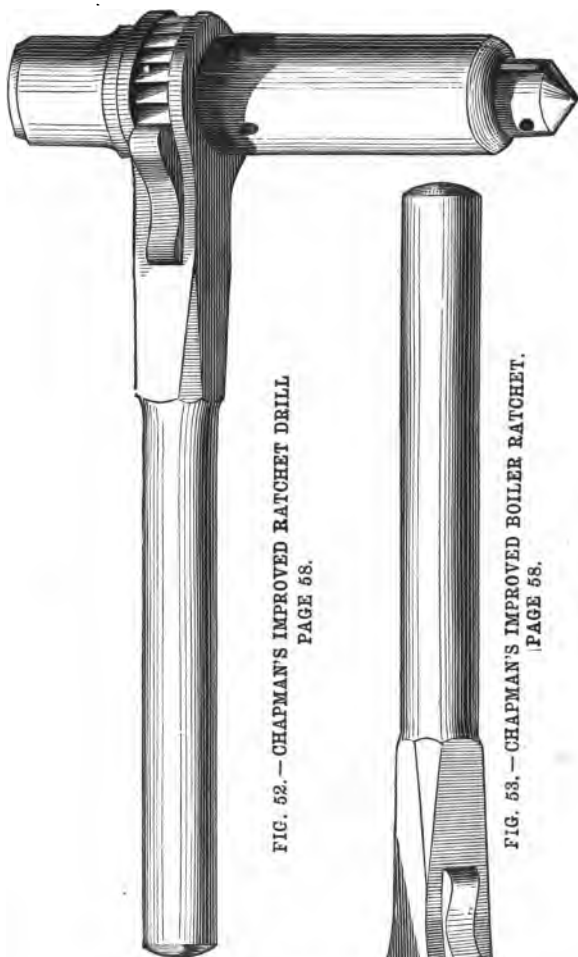


FIG. 52.—CHAPMAN'S IMPROVED RATCHET DRILL  
PAGE 58.

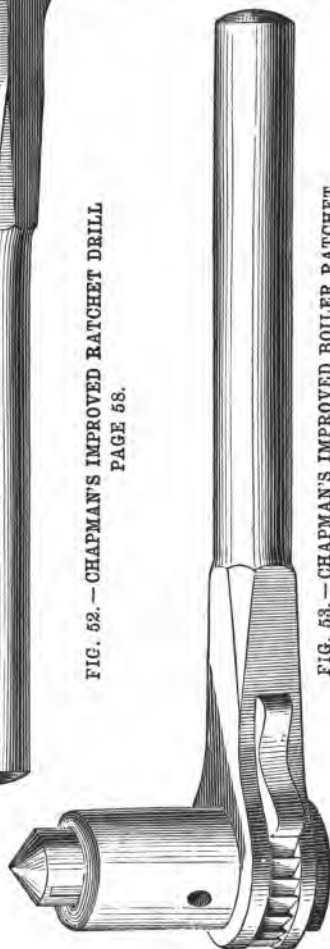


FIG. 53.—CHAPMAN'S IMPROVED BOILER RATCHET.  
PAGE 58.



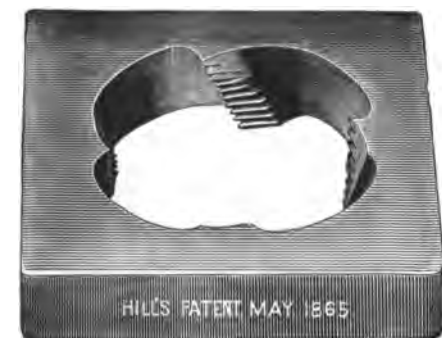


FIG. 55. — HILL'S PATENT SOLID DIE. PAGE 55.

*Fig. 1*

*Fig. 2*

Sectional.  
Perspective.

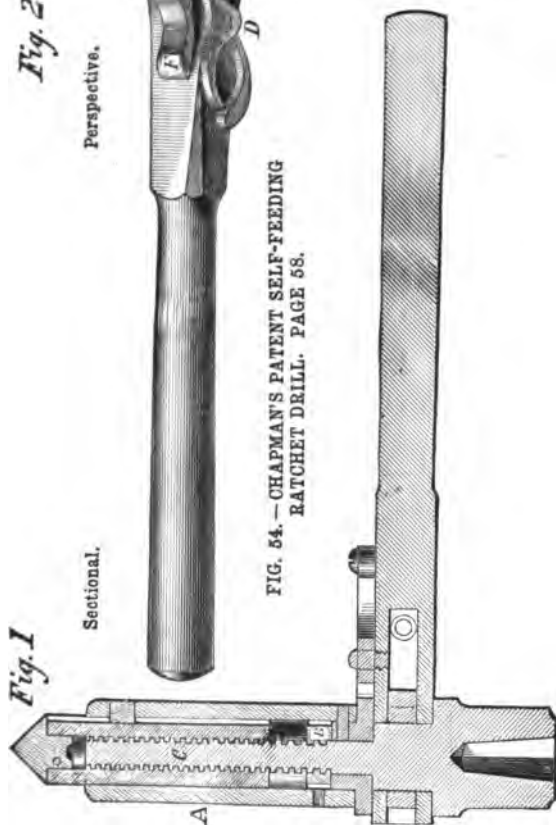


FIG. 54. — CHAPMAN'S PATENT SELF-FEEDING RATCHET DRILL. PAGE 58.



FIG. 56. — TRIPP'S TIGHT GRIP WRENCH. PAGE 60.



FIG. 57. — WEBSTER'S COMBINED WRENCH AND PIPE CUTTER. PAGE 59.

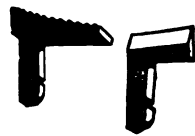




FIG. 58.—BURNER PLYERS. PAGE 56.



FIG. 59.—BURNER PLYERS (2 Holes).  
PAGE 56.



FIG. 60.—BURNER PLYERS (Philadelphia  
Pattern). PAGE 56.



FIG. 61.—GAS PLYERS. PAGE 55.



FIG. 62.—BROWN'S PATENT PIPE TONGS. PAGE 57.



FIG. 63½.—WALWORTH'S PATENT SOLID DIE PLATE. PAGE 53.



FIG. 63.—EXCELSIOR OIL CUP  
FOR LOOSE PULLEYS.  
PAGE 23.



(Perspective.)



Section showing the Patent  
Elliptic Spring.

(Sectional.)

FIG. 64.—PATENT MALLEABLE IRON OILER. PAGE 46.

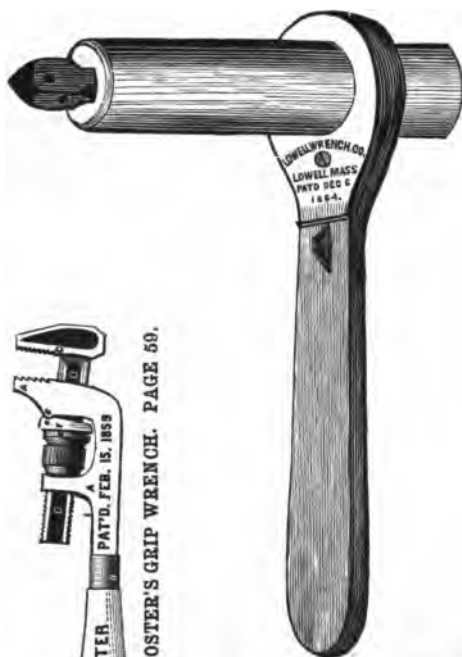


FIG. 65.—FOSTER'S GRIP WRENCH. PAGE 59.

FIG. 66.—MOORE'S  
TRIPLE ACTION  
RATCHET DRILL.  
PAGE 60.



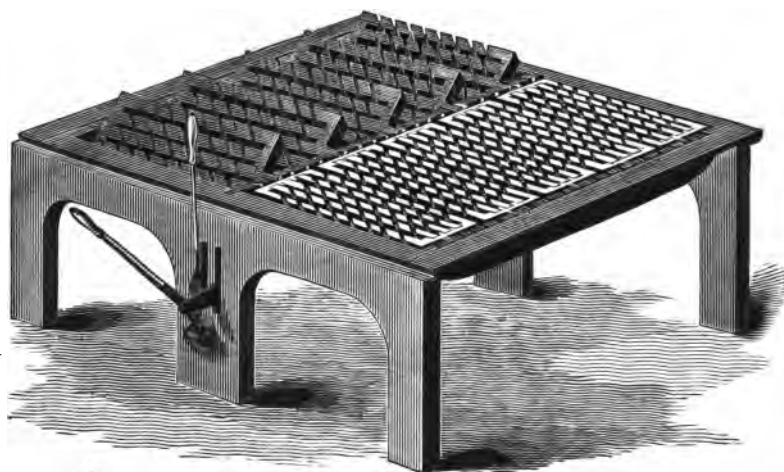
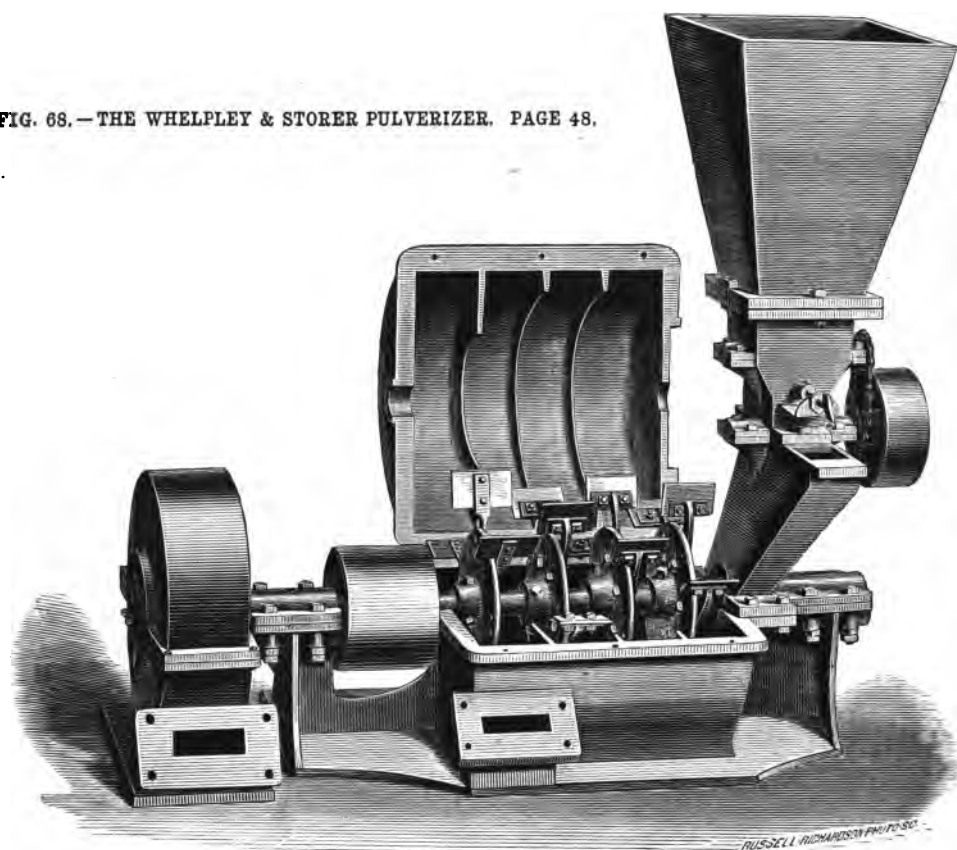
(Outside View.)



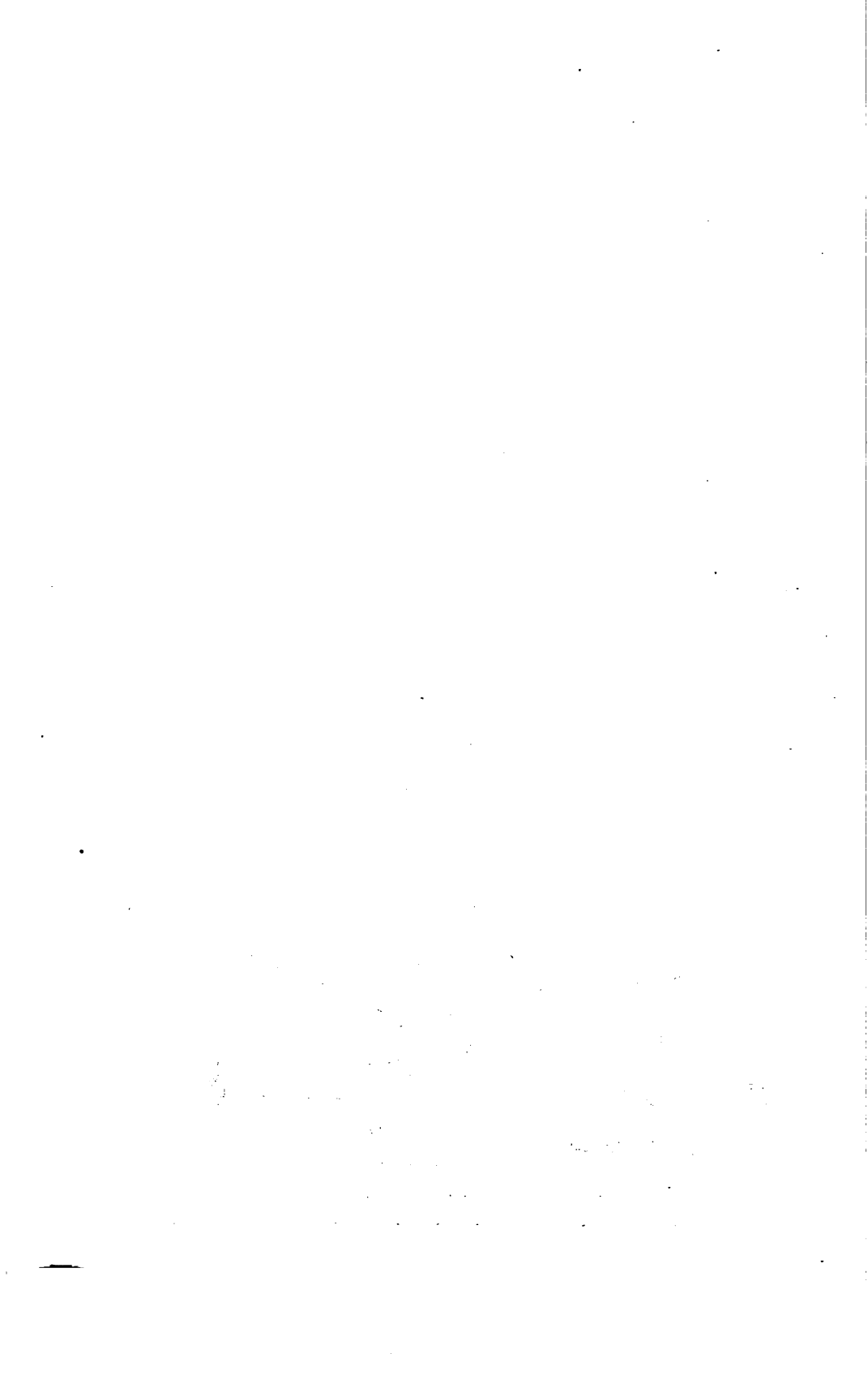
(Inside View.)

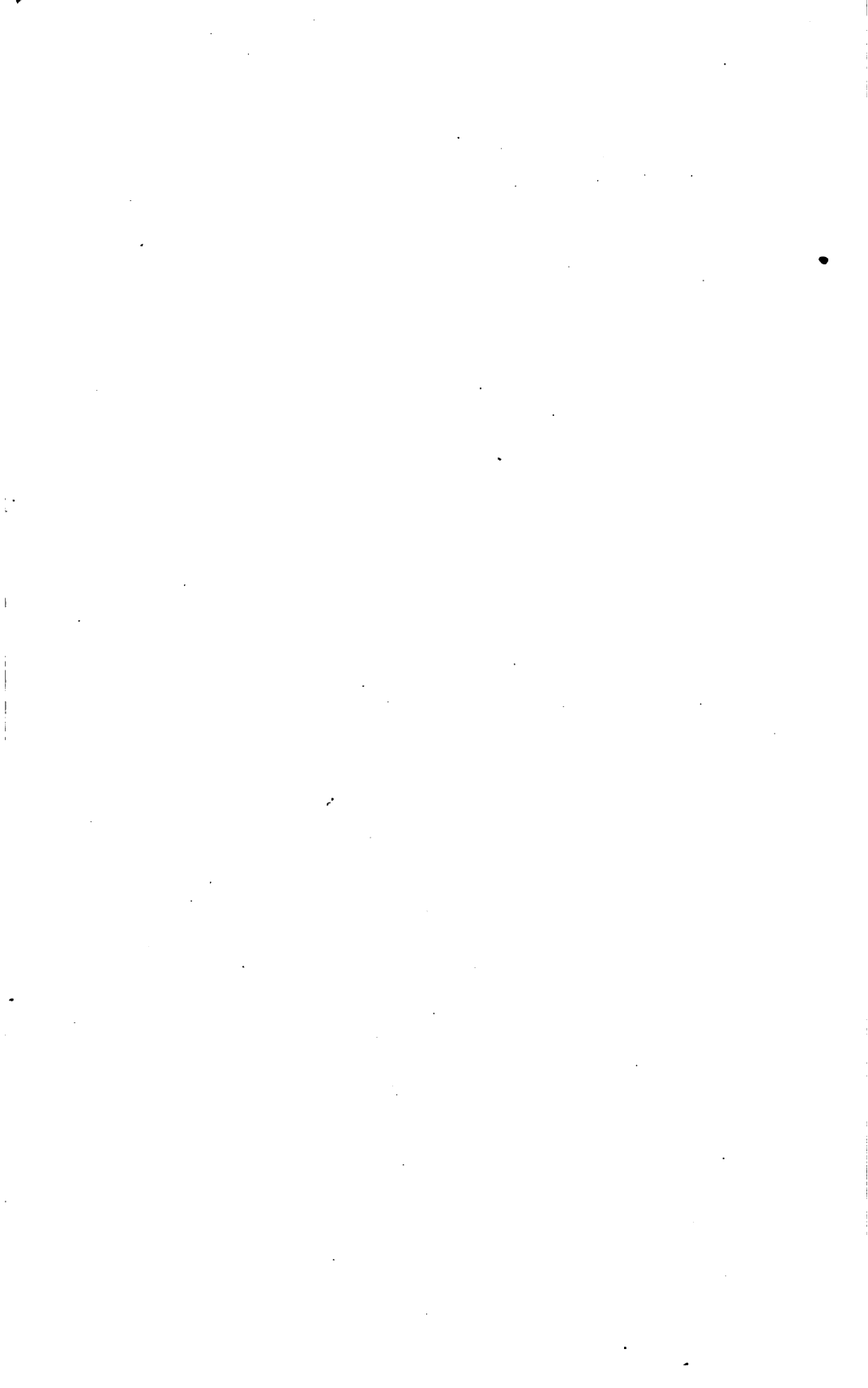
FIG. 67.—MOORE'S TRIPLE ACTION  
RATCHET WRENCH. PAGE 59.

**FIG. 68.—THE WHELPLEY & STORER PULVERIZER. PAGE 48.**



**COLLINSON'S PATENT ROCKING GRATE AND PARAGON GRATE BAR.  
J. J. WALWORTH & CO. SOLE AGENTS FOR THE UNITED STATES.**





R. B. Bayard

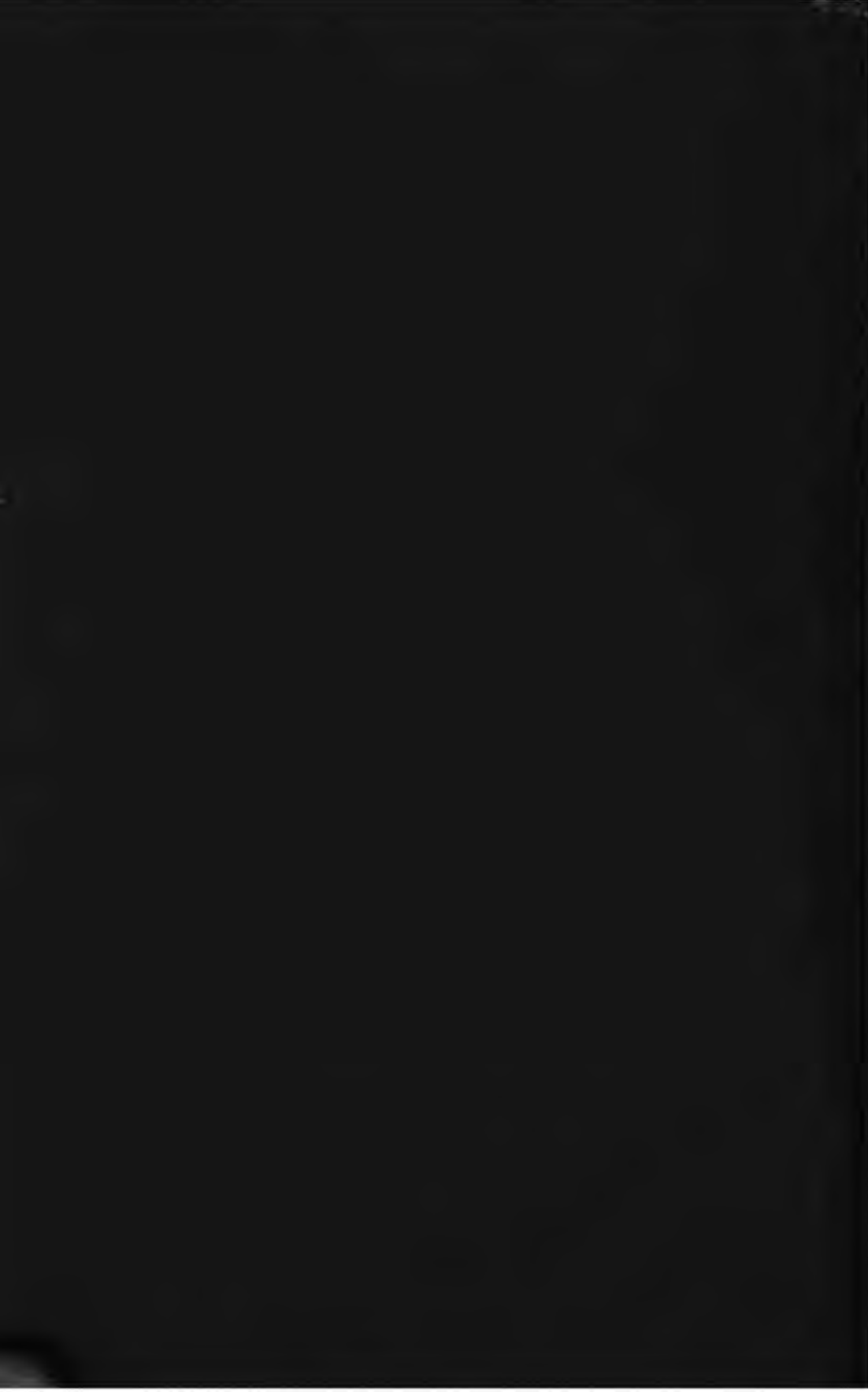
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